

**ETHNOMEDICINAL PLANTS FOR THE MANAGEMENT OF
CARDIOVASCULAR DISEASES IN BANGLADESH.**



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Declaration

I **TAHMINA SULTANA JUTHI** therefore announce that the work introduced in this thesis entitled "**ETHNOMEDICINAL PLANTS FOR THE MANAGEMENT OF CARDIOVASCULAR DISEASES IN BANGLADESH**" is the output of my own examination and exploration. I further proclaim that this thesis has not been submitted in any past application for the honor of some other academic degree in any Department or any other University. All sources of data have been explicitly recognized by referring to the author.

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Certificate

*This is to certify that the whole research work presented in this dissertation, entitled "**Ethnomedicinal plants for the management of cardiovascular diseases in Bangladesh**", is the proper outcome of the original work carried out by **Tahmina Sultana Juthi** at the **Plant Taxonomy, Ethnobotany, Herbal Medicines, and Conservation Biology Laboratory**, Department of Botany and Department of Pharmaceutical Chemistry, University of Dhaka, under our supervision.*

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ABSTRACT

The use of ethnomedicinal plants for curing ailments has been gaining popularity all over the world because of simplicity in the treatment system, affordability to the local people, less expensive, available in nature, and effectiveness in chronic diseases. Currently, the local knowledge of ethnomedicinal plants is in danger because of inadequate scientific documentation. The present study aimed to record and validate the ethnomedicinal knowledge used by the local people for the management of cardiovascular diseases (CVDs). The ethnomedicinal data were collected from the selected districts of Bangladesh during the year 2018-2020 using modern ethnobotanical survey methods. During the survey, a total number of 300 local informants including 67% males and 33% of females were interviewed which were mostly farmers and housewives.

The study had resulted in recording a total of 131 ethnomedicinal plant species under 61 families. The recorded plant species had been used by the people for the treatment of five (5) diseases categories related to the Cardiac problem through 114 formularies. Habit analyses of medicinal plant species showed that herbs (41%) were the leading medicinal plants followed by trees (33%), shrubs (19%), and climbers (7%). Leaves were the most regularly used plant part, with 35% application in traditional medicinal recipes, followed by fruit (26%), seed (12%), root (6%), bark (5%), whole plant (5%), flower (4%), rhizome (2%), tuber (1%), bulb (1%), latex (1%), and stem (1%). The most common medicinal families were Fabaceae, Amaranthaceae, Asteraceae, Cucurbitaceae, and Apocynaceae. Among the diseases categories highest (Fic) value was obtained in Cardiac complaints followed by Blood purifier, Chest pain, High blood pressure, and Antioxidant. The cardiac complaints were managed by a total of 80 medicinal plant species. Among the medicinal plants, the most cited were *Phyllanthus emblica* L., *Allium sativum* L., *Terminalia arjuna* (Roxb. Ex DC.) Wight & Arn., *Achyranthes aspera* L., *Terminalia chebula* Retz, *Allium cepa* L. In the blood purifier category, 76 species were used and *Phyllanthus emblica* L., *Terminalia chebula* Retz, *Allium cepa* L., were most cited. In the chest pain category, 20 species were used and the most cited were *Terminalia arjuna* (Roxb. Ex DC.) Wight & Arn., *Achyranthes aspera* L. In the High blood pressure category, 39 species were used and the most cited were *Phyllanthus emblica* L., *Allium sativum* L., *Terminalia arjuna* (Roxb. Ex DC.) Wight & Arn., *Terminalia chebula* Retz, *Allium cepa* L. In the Antioxidant category, 36 species were used and *Phyllanthus emblica* L., was the most cited plant. Among the 131 plant species, 45 species were

scored 100% fidelity level as culturally important plant species. The record of 131 ethnomedicinal plant species with diverse use patterns reflected the traditional knowledge richness in the study area. Among the ethnomedicinal plants, 10 plant species including *Phyllanthus emblica* L., *Allium sativum* L., *Terminalia arjuna* (Roxb. Ex DC.) Wight & Arn, *Achyranthes aspera* L., *Terminalia chebula* Retz., *Allium cepa* L., *Adhatoda zeylanica* Nees, *Cinnamomum tamala* Nees & Eberm, *Cajanus cajan* (L.) Millsp., *Ipomoea aquatic* Forssk, were cited maximum times by the local people. These species had been used frequently in the study area for primary healthcare also. Among the ten plant species, local use of three species named *Allium cepa* L., *Cinnamomum tamala* Nees & Eberm, and *Ipomoea aquatica* Forssk had been studied because of identifying the effectiveness in chronic diseases.

Methanolic extract of the leaf of *A. cepa*, *I. aquatica*, and *C. tamala* showed 22.24 %, 28.96 %, and 58.99 % lysis of the clot respectively by using 100 µl of streptokinase as a positive thrombolytic control (30,000 I.U) on blood clots and distilled water as a negative control. It showed that the addition of 100 µl of streptokinase as a positive thrombolytic control (30000 I.U) to blood clots with 90 min of incubation at 37°C showed 68.79 % of clot lysis and distilled water was treated as a negative non-thrombolytic control, which exhibited negligible percentages of lysis of clots (2.04%). Of the three plants, *C. tamala* showed the highest thrombolytic activity for clot lysis rather than *I. aquatica* and *A. cepa* plants. The results were very promising. Further research is very necessary to isolate the chemicals responsible for thrombolytic potentials. Based on observations and local people perception, most cited species named *Achyranthes aspera* L., *Cajanus cajan* (L.) Millsp., *Andrographis paniculata* Nees., *Aquilaria malaccensis* Lam., *Dioscorea alata* L., and *Rauvolfia serpentina* (L.) Benth. ex Kurz., were found very rare in the habitat and were also in danger because of anthropogenic pressure, deforestation, lack of knowledge about plants, and mismanagement of plantations in the study area.

Based on the present study, it may be concluded that *A. cepa*, *I. aquatica*, and *C. tamala* might be used as traditional healing purposes of CVDs. Moreover, further animal study will prove the scientific validation of their uses. Management efforts should be provided to save *A. cepa*, *I. aquatica*, and *C. tamala* plants from the extinction in nature.

Introduction, Aims and objectives & Literature review

Ethnomedicinal plants for the management of cardiovascular diseases in Bangladesh.

1.1 INTRODUCTION

Many ancient herbs and their parts are shown to possess medicinal properties and can be used to prevent, alleviate or cure several human diseases. It's calculable that between 70% and 80% of individuals worldwide rely on traditional, largely herbal medicine to meet their primary healthcare needs (Farnsworth & Soejarto 1991; Shengji 2001). Though the precise variety of plants used isn't known, there are some common medicinal plants that have been used by Kavirajes as traditional medicines for a long time. This traditional attempt at treatment has survived the enormous takeover of the trendy health care system for the beliefs of nature's individuals. Consequently, the information behind the use of medicinal plants is passed down from ancestors to predecessors. Many clear preparation and validation protocols have been determined for the use of some medicinal plants. Still, rural, tribal, and folk societies admire easy preparations like infusions, decoctions, and powders from plants due to the great availability of the plants. Infectious diseases are major diseases caused by infective microorganisms like bacteria, viruses, and fungi. Pneumonia, meningitis, food-borne infections, ear infections, urinary tract infections, just like gonorrhea and syphilis, are being treated by various plant parts. It's been ascertained that a lot of trendy medicines are derived from the plants used by indigenous peoples (Balick & Cox, 1996; Rahmatullah, Azam, *et al.*, 2010). Necessary trendy medicines just like Aspirin, Atropine, Ephedrine, Digoxin, Morphine, Quinine, Reserpine, and Tubocurarine are derived from the observation of ancient native treatments. Worldwide, CVD plays a bigger role in being a significant explanation for morbidity and mortality (Krisela 2007). Globally, it is estimated to cause approximately 16.7 million deaths per year (World Health Report, 2003). It's approximately 17.9 million deaths annually worldwide, representing 31% of all global deaths. Of these deaths, 85% are due to heart attacks and strokes. (World Health Report, 2011). In 2015, 82% of the 17 million premature deaths under 70 from noncommunicable diseases occurred in low- and middle-income countries, with CVD accounting for 37% (World Health Report, 2011). The CVD rate is predicted to increase from 28.9% to 36.3% between 1990 and 2020 (Gowri *et al.*, 2011). Additionally, CVD is predicted to rise from fourth to first in terms of ranking, and is predicted to rise from fifth to first as an explanation for premature death and disability (Hennekens, 2000). Smoking, elevated cholesterol, hypertension, obesity, lack of exercise, and diabetes are the

leading causes of CVD (Olorunnisola *et al.*, 2011). Historically, Bangladesh may have been burdened with infectious diseases like several low-income countries in the world. Compared to different ethnic groups, South Asians, like those from Bangladesh, Pakistan, Nepal, and other Asian nations and states, have a better prevalence of CAD and connected risks (Yusuf *et al.*, 2001). Southern Asians have a 3-5 fold higher risk of myocardial infarction, (Gupta *et al.*, 2006). Over 25 international loci for CAD (CAD Genetic Consortium, 2011) and type 2 diabetes (Saxena *et al.*, 2013) have already been discovered, showing that there are genetic risk factors for cardio metabolic conditions that apply to people and folks of South Asian ancestry and European ancestry. It's simply that Bangladeshis share constant sensitivity to CAD as individuals in South Asia. Bangladesh has the highest risk of CVD according to the INTERHEART survey among the five South Asian countries, with the highest rates of self-reported hypertension (14.3%), obesity (43.3%), and smoking (59.9%) and therefore, the lowest prevalence of standard physical activity (1.3%) and daily consumption of fruits and vegetables (8.6%) (Joshi *et al.*, 2007). Bangladesh has 97.9% of females and 99.6% of males exposed to one of the known risks of CVD, with CVD in young age (males under 40 years of age) (Islam *et al.*, 2014, El-Saharty *et al.*, 2013, Enas *et al.*, 1995). In Bangladesh, several known plants possess cardioprotective properties, hence their use by traditional healers for the remedy of chest complaints, excessive cholesterol, high and low blood pressure, and well-known coronary heart problems. Some plants are used for the treatment of thrombolytic diseases in various systems of ancient medicine and traditional medicine or antithrombotic activity, and such plants claimed in ancient systems still remain to be scientifically investigated (Lee *et al.*, 2012; Kumar *et al.*, 2011; Manicam *et al.*, 2010). To safeguard this data, documentation of ethnic medicinal plants is starting in Bangladesh. Several articles revealed in this field include Haque & Mia (1988). Khan & Hassan (1986, 1996); Alam *et al.*, (1996); Alam (1992); Khan *et al.*, (2002); Uddin *et al.*, (2001, 2006, 2012, 2017); Ghani (2003); Uddin & Roy (2007); Uddin *et al.*, (2009); Roy *et al.*, (2008); Emily *et al.*, (2010); Haque *et al.*, (2014); Uddin (2013); Uddin *et al.*, (2015); Uddin *et al.*, (2019), Haque *et al.*, (2017);. This articles listed several medicinal plants from specific communities, specific diseases, or specific regions in Asia. However, there aren't any adequate records of ethnomedicinal plants contributive to management of CVD in Bangladesh during this survey. This survey explored the record of use of plants as anthropology, determining the use of medicinal plants for several diseases among plant users, determining the medicinal plant species most used

by the residents of the surveyed location of the study area, and finding ethnically important medicinal plants for cardiovascular diseases management.

1.2. Aims and objectives:

In order to report and validate ethnomedicinal plants for CVD management in Bangladesh, an attempt may be made to gain the following objectives:

1. To record, integrate and document all scattered distribution of traditional healthcare knowledge of ethnomedicinal plants for CVD management.
2. To determine ethno-medically potential and culturally important and most cited medicinal plants using statistical models.
3. To validate the folk knowledge of ethnomedicinal plants with thrombolytic agents.

1.3. Literature review:

1.3.1 Review from ethnobotanical studies in Bangladesh:

Determination of informant consensus factor of ethnomedicinal plants used in Kalenga forest, Bangladesh was done by Uddin *et al.*, 2014. The villagers of the Kalenga woodland zone agree on assessing the potential for new herbal drugs. They recorded 25 families under 35 plant species for the treatment of 11 classifications of sickness, utilizing 52 therapeutic models in the Kalenga forest area. They had an extraordinary understanding among the sources with respect to ethnomedicinal use of plants with the value Factor of Informant Consensus (Fic) esteem going from 0.50 % to 0.95 %, with a normal estimation of 0.73 %. They discovered that the majority of the sources agreed on the use of *Litsea glutinosa* to treat diarrhea (Fic: 0.95), indicating the prominent level of consistency (95.23%). The consequences of the investigation additionally demonstrated that *L. glutinosa* may be used for the advancement of new, modest, compelling, and eco-accommodating natural definitions for the administration of medical care.

Ethnobotanical survey of medicinal plants in Phulbari upazila of Dinajpur district Bangladesh were done by Uddin *et al.* in 2006. Total of 86 species were used as medicinal plants by the Santal people group. From the review work in Phulbari Upazila, total 86 plant species were recorded by

them. They informed that these species are used by the Santal people group for various ailments. Sal woods with related species had been changed with the aid of using *Acacia* species and *Eucalyptus* species plantations in exceptional herbal woodland patches of the Upazila.

The use of ethno-medicinal plants in and around Lawachara national park were performed by Uddin *et al.*, 2012. A complete number of 30 families under 56 plant species with 70 models (treatment mode) has been reported. Among the therapeutic species, *Cucurbita pepo* L., *Citrus limon* (L.), *Euphorbia pulcherrima*, *Lepisanthes rubiginosa* and *Mimosa diplotricha* have been accounted for as new therapeutic species from Bangladesh. Out of these plant species, 19.64% shrubs, 39.29% herbs 5.36% climbers and 3.71% trees.

Knowledge of ethnomedicinal plants and informant consensus around Lawachara Public Park was done by Uddin *et al.*, 2017. They recorded total of 124 medicinal plants with 245 formularies to treat 53 ailments. They archived 124 species of which herbs were spoken to by 43%, climbers by 11%, trees by 31% and shrubs by 15%. If there was an occurrence of cuts and wounds, they obtained the most extreme agreement (Factor Informant Consensus, $Fic > 0.80$), followed by respiratory ailments, jaundice, diabetes, dysentery, dermatitis, diarrhea, gastrointestinal complaints, anthelmintic, impotence, and high blood pressure. *Oroxylum indicum*, *Chromolaena odoratum*, *Cuscuta reflexa*, *Cericoides campanulata*, *Averrhoa carambola*, *Justicia adhatoda*, *Cajanus cajan* and *Citrus aurantifolia* appeared to have 100% fidelity values (FI). *Mikania cordata*, *Litsea glutinosa*, *Azadirachta indica* and *Ocimum sanctum*, were scored with the greatest percent of respondent knowledge values (PRK).

Ethnomeicinal plants used by the local people of Feni district, Bangladesh were conducted by Uddin *et al.* in 2015. The examination has brought about a chronicle of 115 medicinal plant species with 216 formularies to treat 69 illnesses. They discovered that this species belongs to 55 different families. They revealed the most noteworthy Fic value in the ailment category named "Cuts and Wounds." Medicinal plants used for this reason are *Mikania cordata* and *Cynodon dactylon*, which were referred to by numerous sources.

Medico-botanical report on the Chakma community of Bangladesh was done by Uddin *et al.*, 2008. A total number of 90 plant species have been identified as being used in the treatment of various

diseases by the Chakma people. Out of all the 90 species, total of three species, viz., *Gomphostemma parviflora* Wall, *Brownea coccinea* Jacq, and *Pyrrosia piloselloides* (Pteridophyte), were identified to have medicinal incentive unexpectedly from Bangladesh.

Ethno-medico studies on the uses of plant in the Chakma community of Khagrachari district, Bangladesh was finished by Uddin M.S. *et al.*, 2014. They found total number of in 47 genera, 50 plant species under 37 families had been identified, which were used for the treatment of 29 unique illnesses by the traditional practitioner. Apocynaceae was the prominent used famil by the Chakma people. Generally leaves had been used for the components of folks medicine.

Ethnomedicinal Survey of Dhamrai Upazila in Dhaka district, Bangladesh was done by Rahmatullah *et al.*, 2009. They found that an absolute number of 33 families distributed into 46 plant species was obtained. The different sicknesses treated with these herbs included respiratory tract disorders just like mucus, fever, cough, gastrointestinal disorders, helminthiasis, pain, tooth infections, constipation, bloating, diarrhea, dysentery, stomachache, cuts and wounds, diabetes, tumors, swellings, eye illnesses like conjunctivitis, ear infections, pores and skin illnesses, debility, abscesses, insect bites, urinary tract issues and hypertension.

Ethnomedicinal survey of plants used by the folk medicinal practitioner (FMP) in the Jamalpur sadar Upazila, Jamalpur district, Bangladesh was completed by Ahamed *et al.*, (2018). They found that the sources used, for the most part, 31 medicinal plants belonging to 25 families. The part generally used is the leaf (31.75%) and the most un-used is the flower (6.34%). They discovered that their formulation cured nearly 18 different types of illnesses.

A survey of medicinal plants used by Kavirajes of Chalna area, Khulna district, Bangladesh was completed by Rahmatullah *et al.*, 2009. There were 50 medicinal plants that were gotten from them. These medicinal plants had a place among the 49 genera and 33 families. From those plants 25 plants have been used to treat skin diseases and 23 plants to treat disorders of the intestinal tract, including dysentery, indigestion, constipation, and diarrhea.

A medicinal plant variety in Chittagong, Bangladesh: An information base of 100 medicinal plants was finished by Hasan *et al.*, 2014. They included the information base of 100 medicinal plant types from 52 families covering herbs, shrubs, climbers, and trees. The Asteraceae family

contained the most noteworthy number of species, trailed by Caesalpiniaceae, Fabaceae, Poaceae, Liliaceae, Euphorbiaceae, Araceae, Apocynaceae, Solanaceae, and others. They discovered a complete number of 53 herb species, though shrubs, climbers, and trees were 28, 3, and 16. The most noteworthy levels of usable plant parts were the leaf (41%), bark (12%), root (22%), fruit (12%), flower (4%), stem (2%), rhizome (2%), seed (2%), inflorescence (1%), tuber (1%), trunk (0.5%), and entire plant (0.5%). The database emphasizes the significance of setting up preservation needs, sustainable development, and remedial uses of different medicinal plants. In the long run, this examination work will assist in looking for sensitive, simple, cost-effective drug principles from natural products.

Ethno-medico-botanical knowledge from Kawkhali proper and Betbunia of Rangamati District, Bangladesh was finished by Yusuf *et al.*, 2006. They recorded 34 species with 23 genera and 17 families, which were used by the Marma & Chakma community and the Bangladeshi people staying for the treatment of 31 illnesses.

1.3.2 Review from ethnobotanical studies outside Bangladesh:

Herbal medicine for cardiovascular diseases: efficacy, mechanisms, and safety was done by Shaito *et al.*, 2020. They looked at how herbs may be used to treat cardiovascular illness. Additionally, information on the ethnopharmacological medicine potential and medicinal characteristics of four commonly utilized herbs, namely ginseng, *Ganoderma lucidum*, *Gynostemma pentaphyllum* and *Ginkgo biloba*, is gathered. The use of these four plants in the treatment of CVDs such as myocardial infarction, peripheral vascular disease, hypertension, coronary heart disease, dyslipidemia and cardiomyopathies has been examined and evaluated. They also attempted to describe current research that uses in vitro and in vivo experiments to examine the cellular and molecular cardio-protective mechanisms of the four plants. Finally, they looked through and reported on the findings of recent clinical trials using these four medicinal plants, with a focus on their effectiveness.

Ethnobotanical study towards conservation of medicinal and aromatic plants in upper catchments of Dhauli Ganga in the central Himalaya was done by Kandari *et al.*, 2012. During their review, 50 medicinal plants having a place in 44 genera & 31 families were reported. plants have been used to deal with pores and skin illnesses and 23 plants for remedy of intestinal tract problems

which included indigestion, constipation, diarrhea, stomachache, and dysentery. They found that 8% of cultivated species grew in home gardens and 14% in agricultural fields. However, 42% of the plants had roots and rhizomes, followed by leaves (26%), seeds (10%), seeds and leaves (8%), bark and whole plant (6%) and flowers (1%). Most plants were accounted for as being used for an ailment, followed by stomach issues, colds, hacks, and jaundice. There were 33 plant species accounted for by those that have more than one therapeutic use, while 17 species were accounted for as being used for a single ailment.

Plant inventory and ethnobotanical study of Khimti hydropower project, central Nepal were finished by Sigdel *et al.*, 2013. They gathered 96 plant species, sharing a place with 86 genera and 58 families, which were reported. The biggest number was used by the informants as medicine (46 plant species) followed by fooder (21 plant species) and consumable (18 plant species) categories.

Ethnobotanical study and conservation status of local medicinal plants: towards a repository and monograph of herbal medicines in Lesotho was completed by Mugomeri *et al.*, 2016. They recorded that the herbal medicines were from 46 genera & 54 medicinal plants sharing space with 29 families. Asteraceae (20%) was the mostly recognized plant family where local cultivators used roots (57%) are the most commonly used part.

An ethnobotanical study of medicinal plants used by local people in the lowlands of Konta Special Woreda, southern nations, nationalities and peoples regional state, Ethiopia was completed by Bekalo *et al.*, 2009. They reported a complete number of 120 species, gathered into 47 families and 100 genera, that were used in traditional medical practices were distinguished and considered. The Lamiaceae and Fabaceae were the most commonly studied plants, with (13.3%) and (12%) species, individually. 25.4% of the complete medicinal plants were gathered from home gardens, and the rest (74.6%) were gathered from wild environments. They distinguished among the many medicinal plants that 108 species (90%) were used to treat human illnesses, 5% for livestock diseases, and the remaining 5% for both human and livestock medical issues.

Ethnobotanical study of medicinal plants in the environs of Tara-gedam and Amba remnant forests of Libo Kemkem District, northwest Ethiopia was completed by Chekole *et al.*, 2015. The archived a total number of 163 medicinal plant species in 145 genera and sixty seven families, amongst

which *Zehneria scabra* drew the best community consensus. There were 71% of medicinal plants used for human illnesses treatment, 21% for both humans and animals, and 8% for both humans and animals. They discovered the Asteraceae, with 14 species, had the biggest amount of medicinal plant species. The medicinal plants essentially (79.1%) have a place in the herb and shrub classifications, and the majority were sourced from the wild natural surroundings. Leaves and new plant materials were more used for medicine preparation than the other parts.

Ethnobotanical study of medicinal plants used in the management of diabetes mellitus and hypertension in the Central Region of Togo was completed by Karou *et al.*, 2011. They uncovered the outcome that (63.64%) had treated something like one instance of diabetes mellitus or hypertension. They featured the uses of 64 species, having a place in 31 families for treatment of diabetes mellitus or hypertension. They tracked down the most used plants against diabetes as *Sarcocephalus latifolius*, *Khaya senegalensis*, *Annona muricata*, *Psidium guajava*, *Securidaca longepedunculata* and *Bridelia ferruginea* while *Parkia biglobosa* and *Allium sativum* trailed by *Gardenia ternifolia* *Khaya senegalensis* and *Persea americana* were the most regularly referred to as antihypertensive.

Ethnobotanical study on medicinal plants used by Maonan people in China was used by Hong *et al.*, 2015. The Mayans recorded total number of 368 medicinal plant species and archived their medicinal uses, the greater part of which came from the wild environments. They tracked down that the plants were used for the treatment 95 human illnesses.

Ethnomedicinal Plants Used by Residents in Northern Surigao del Sur, Philippines were finished by Gruyal *et al.*, 2014. They assembled the data on the 65 plant species as medicinal plants and used them by the residents to treat various types of illnesses and sicknesses. They said that the mostly used plant parts as far as the level of the complete number of species were the leaves (84.3%), stems (8.9%), bark (4.3%), hair, roots (7.1%), and rhizome (1.4%). They discovered that the most well-known health problem treated by identified medicinal plants were respiratory illnesses, wounds, boils, stomach ailments.

Ethnobotanical investigation on medicinal plants in Algoz area (South Kordofan), Sudan was completed by Issa *et al.*, 2018. They found that total of 94 medicinal plants, which have a place in

81 genera and 45 families were recorded in the review region. The most addressed families are Leguminosae with 20 species, followed by Combretaceae, Rubiaceae and Asteraceae. They described the species as belonging to the following groups: trees (28%), herbs (43%), shrubs (22%), parasites (3%) and climbers (4%). The most commonly used plant parts were the root and stem (21% each). The majority of cures were administered orally (67%), with maceration (32%) and infusion (36%) being the most commonly used strategies. They tracked down that the highest informant consensus factor (0.87) was accounted for by poisonous creature bites, followed by blood system disorders (0.88), urinary system diseases (0.89), and gynecological diseases (0.87).

1.3.3 Review from cardiovascular studies in Bangladesh:

Thrombolytic potentials of some medicinal plants used by the local people for cardiovascular diseases in Bangladesh was done by Uddin *et al.*, 2021. They documented that the thrombolytic capability of six medicinal plants available in Bangladesh the use of an in vitro clot lysis method where streptokinase and ethanol have been used as a positive and negative control, respectively. Ethanolic extracts of the *Terminalia arjuna*, *Allium sativum*, *Dillenia indica*, *Phyllanthus emblica*, *Spondias pinnata*, *Baccaurea ramiflora* showed $14.18 \pm 1.23\%$, $10.72 \pm 0.78\%$, $8.25 \pm 0.42\%$, $7.08 \pm 0.64\%$, $5.42 \pm 0.47\%$ and $2.47 \pm 0.19\%$ clot lysis, Respectively, while the usual drug streptokinase lysed $41.11 \pm 0.31\%$ clot at a dose of 30,000 I.U. It is clear from the findings that ethanolic extracts of 6 herbs have modest to minor thrombolytic effects.

The study on ethnomedicinal plants for the prevention of cardiovascular diseases in Bangladesh was done by Uddin *et al.*, 2019. They documented a complete variety of medicinal plant species that were recorded for cardiovascular diseases. These species belonged to 30 families. The used medicinal plant species known for cardiovascular diseases were *Terminalia arjuna*, *Terminalia chebula*, *Terminalia bellirica*, *Tamarindus indica*, *Allium sativum*, and *Alternanthera sessilis*. Following these classes, high Fic value was found as an antioxidant, followed by and blood purifier, heartache, and high blood pressure. In comparison with previous analysis, they found that *Alternanthera paronychioides* and *Hylocereus undatus* and common *Lactuca sativa* L. had been newly mentioned medicinal plants for cardiovascular diseases in Bangladesh.

Increased thrombin levels during thrombolytic therapy in acute myocardial infarction was done by Gulba *et al.*, 1991. They found that the generation of coagulase throughout lysis may be a major

determinant for the success of medical care and that thrombin-antithrombin III levels could function as predictors for the short-term prognosis.

Evaluation of thrombolytic and membrane stabilizing activities of four medicinal plants of Bangladesh was done by Sharmin *et al.*, 2013. They used methanol extracts of *Abrus precatorius* leaves of *Dracaena spicata* Roxb., *Magnolia pterocarpa*, and *Ravenala madagascariensis*. Each *Ravenala madagascariensis* leaf and bark, as well as their hexane, chloroform carbon tetrachloride, and aqueous soluble partitionates were tested for pharmaceutical and membrane stabilizing activities. It was clearly documented from the above findings that the extractives of *D. spicata*, *A. precatorius*, *R. madagascariensis* and *M. pterocarpa*, bark exhibited delicate to moderate pharmaceutical activity, whereas the *R. madagascariensis* demonstrated important pharmaceutical activity.

Inventory of threatened plants of Bangladesh and their conservation management was investigated by Rashid *et al.*, 2013. They found that the soluble extractives of 3 *Bridelia* species *B. tomentosa*, *B. verrucosa*, and *B. stipularis* growing in Bangladesh were documented for free radical scavenging activity, phenolic content and antioxidant capability. They documented that among the 3 plants, the carbon tetrachloride fraction, alcohol extract of the leaves and the aqueous soluble fraction of the bark of *B. tomentosa*, the alcohol extract of the bark of *B. stipularis*, and the carbon tetrachloride soluble fraction of the leaf of *B. verrucosa* exhibited the highest pharmaceutical activity with clot lysis values of 41.46%, 34.85%, 37.04%, 36.45%, and 33.72%, severally. They found that the streptokinase was used as a positive control that showed 61.50% lysis of the clot, whereas the negative control showed 2.56% clot lysis.

Phytochemical screenings and thrombolytic activity of the leaf extracts of *Adhatoda vasica* was done by Shahriar, 2013. The discovery of cardio-protective medication, the extractives of *Adhatoda vasica* was showed pharmaceutical activity and the results were presented in 100 μ l Streptokinase, a positive control (30,000 I.U.), to the clots and subsequent incubation for 90 minutes at 37°C, showed 80.65% lysis of the clot. He used water as negative management and exhibited negligible lysis of the clot (4.08%). Consistent with the study, methanolic fraction (MF) exhibited the most pharmaceutical activity (53.23%).

Evaluation of thrombolytic activity of four Bangladeshi medicinal plants, as a possible renewable Source for thrombolytic compounds was done by Sikder *et al.*, 2011. They documented 4 Bangladeshi medicinal plants *Justica gendarussa*, *Hydnocarpus kurzii*, *Sansevieria trifasciata* and *Mesua nagassarium* that had been showed in vitro pharmaceutical activity. The clot lysis activity that become assessed with the aid of using addition of the test material to the pre clotted blood and incubation for 90 min at 37°C and become expressed as % lysis of the clot.

Studies of thrombolytic, antioxidant and cytotoxic properties of two Asteraceous plants of Bangladesh was done by Kawsar *et al.*, 2011. They found that two Bangladeshi medicinal plants, *Vernonia cinerea* and *Tridax procumbens* had in vitro thrombolytic, membrane stabilising, and cytotoxic properties. They documented that the full variety of phenolic content was conjointly determined and exposed in gallic acid equivalent. When their analysis was conducted between the 2 plants, the methanol extract of *T. procumbens* showed the highest thrombolytic activity with a clot lysis value of 21.15% wherever standard streptokinase and water were used as positive and negative controls, which showed 66.77% and 2.64% lysis of clots of human blood, respectively.

Assessment of thrombolytic activity of five Bangladeshi medicinal plants: potential source for thrombolytic compounds was done by Hossen *et al.*, 2014. The aim of their project work was to assess the pharmaceutical activity of 5 Bangladeshi plants extract different solvents. There have been five plants named *Pistia stratiotes* (Topa Pana), *Geodorum densiflorum* (Shankhamul), *Pandanus foetidus* (Keya), *Smilax zeylanica* (Kumarilata), and *Tabernaemontana coronaria* (Tagar). When their study concerning the herbs *Pandanus foetidus*, *Pistia stratiotes* and *Smilax zeylanica*. Roots showed a significant factor of clot lysis, 47.54%, 43.35%, 41.49%, and 35.85%, and to the streptokinase solvent 70.24%.

Effects of organic extracts and their different fractions of five Bangladeshi plants on in vitro thrombolysis was done by Emran *et al.*, 2015. In vitro thrombic model, several fractions of 5 medicinal plants, specifically *Trema orientalis*, *Bacopa monnieri*, *Capsicum frutescens*, *Brassica oleracea*, and *Urena sinuata*, showed numerous clot lysis activities. They documented that the chloroform fractions of *T. orientalis*, *B. monnieri*, *C. frutescens*, *B. oleracea*, and *U. sinuata* showed the significant clot lysis activity, viz., $46.44 \pm 2.44\%$, $48.39 \pm 10.12\%$, $36.87 \pm 1.27\%$,

$30.24 \pm 0.95\%$ and $47.89 \pm 6.83\%$ comparing with positive control (streptokinase, $80.77 \pm 1.12\%$) and negative control (sterile distilled water, $5.69 \pm 3.09\%$).

1.3.4 Review from cardiovascular studies outside Bangladesh:

A preliminary novel finding in vitro anticoagulant activities of *Melastoma malabathricum* Linn. aqueous leaf extract was done by Manicum *et al.*, 2010. They discovered that the liquid leaf extract of *Melastoma malabathricum* which has anticoagulant properties, was essential to the current study. In vitro coagulation action assays like prothrombin time (PT), activated partial thromboplastin time (aPTT) and thrombin time (TT) intermixture studies were performed on the citrated plasmas of volunteer donors spiked with several concentrations of the leaf extract (100 - 1000 $\mu\text{g/ml}$). They documented that their study highlighted that anticoagulant activity of *M. malabathricum* liquid leaf extract affects intrinsic pathway of the natural action cascade by clotting factor deficiency.

Ethnobotanical information on plants used for the management of cardiovascular diseases in Nkonkobe Municipality in South Africa was done by Olorunnisola *et al.*, 2011. They disclosed regarding the study that 19 plants were used for the treatment of cardiovascular disease, high blood pressure, stroke, and chest pain within the municipality. They mentioned that 53% of the plants were used for chest pain, 42% for cardiovascular disease, 47% for high blood pressure, 16% for stroke, and 11% for hypercholesteremia. Those plants belonged to 16 different families, with the Hypoxidaceae, Asteraceae and Leguminosae being well-known for their use in cardiovascular illnesses.

Protective effects of *Terminalia arjuna* against Doxorubicin induced cardiotoxicity was done by G. Singh *et al.*, 2008. They'd marked *Terminalia arjuna* as a possible cardioprotective agent since the Vedic period. They aimed to analyze the consequences of the butanol fraction of *Terminalia arjuna* bark on antibiotic drug-induced cardiotoxicity.

Protective effect of *Terminalia chebula* against experimental myocardial injury induced by isoproterenol was done by Suchalatha *et al.*, 2004. They found that the cardioprotective impact of ethanolic extract of *Terminalia chebula* fruits was examined by them in isoproterenol induced

heart muscle injury in rats. They detected that the number of lipid peroxides inflated considerably within the serum and heart. A big decrease was additionally ascertained by them in the the heart muscle marker enzymes activity, with a concomitant increase in their activity in serum. They found that *Terminalia chebula* extracts pretreated to ameliorate the impact of medicine on lipid peroxide formation and maintain in the diagnostic marker enzymes activities.

Traditional herbs: a remedy for cardiovascular disorders was done by S. Rastogi *et al.*, 2015. They knew that medicinal plants had been used in patients with symptoms of heart failure, angina pectoris, atherosclerosis, cerebral insufficiency, systolic hypertension, venous insufficiency, and arrhythmia. They documented the traditional remedies that had been used for cardiovascular diseases treatment. They found that the four medicinal plants, like Garlic (*Allium sativum*), Hawthorn (*Crataegus oxyacantha*), Guggul (*Commiphora wightii*), and Arjuna (*Terminalia arjuna*), had been used in the treatment of cardiovascular disease for many years. They used the effectiveness of these plants for cardiovascular diseases treatment as well as congestive heart failure, ischemic heart disease, hypertension, and arrhythmias.

Development of an in vitro model to study clot lysis activity of thrombolytic drugs was done by Prasad *et al.*, 2006. They found a significant clot lysis percentage once streptokinase was used. On the water (a negative control), minimal (2.5%) clot lysis was ascertained by them. They detected that there was a big distinction between the clot lysis caused by water and streptokinase.

High-density lipoprotein enhancement of anticoagulant activities of plasma protein S and activated protein C was done by Griffin *et al.*, 1998. They speculated that high density lipoprotein (HDL) may help down regulate thrombin generation in vivo and that anticoagulant action is one of high density lipoprotein (HDL's) beneficial activities.

Materials and Methods

2.1. Materials:

2.1.1 Study area:

Bangladesh is positioned among 20°34' and 26°38' N and 88°01' and 92°41' E and the entire region is 147,570 sq. km. The United States of America is bounded by Burma to the South-east corner, by India to the West, North, and East, and by the Bay of Bangle to the south. It has a completely unique geographical location, spanning a short stretch of land among the Indian Ocean and the Himalayan chain. It is the simplest drainage outlet for the river basin complex together with the Brahmaputra, Ganges, and Meghna rivers and their community of tributaries (GoB 1992). The land (64.2%) is below agricultural use and (10.2%) of the entire land is below woodland cover (FAO, 2005). Bangladesh is ornamented by specific wooded area kinds which include Mangrove forest, hill wooded area, simple land sal forest, clean water swamp forest, and dwelling house vegetation. Among the wooded area types, local plants may be very various because of geomorphological variations and it also a dwelling place for a good number of ethnic communities. According to Professor M. Salar Khan, The country may have 5000 angiosperm plant species and currently a few plant taxonomist compiled 3611 species from current literature. Among them, greater than 1000 plant species had been utilized by the local people because of having medicinal values. They have been using native plant species for their primary healthcare and also have their cultural tradition and heritage in their social life. Their knowledge and uses of medicinal plants will help to conserve the medicinal plants for further analyses.

Eight sampling sites have been selected for data collection in Bangladesh. These are Dhaka, Savar, Narayanganj, Munshiganj, Manikganj, Tangail, Chattogram, and Chandpur. Following the districts: Dhaka, Savar, Narayanganj, Munshiganj, Manikganj, Tangail, under the division of Dhaka, and Chattogram, Chandpur, under the division of Chattogram. The tropical moist deciduous forests known as "Sal forests" can be found in Dhaka's affluent districts. The tropical semi-evergreen forests are situated in most of the hill forests of Chittagong, Cox's Bazar and Chattogram Hill Tracts. Though the study period and the findings of the present study are very preliminary, Long-term studies are needed to validate the ethnomedicinal plants by covering all the Bangladesh regions used by the local people for the management of cardiovascular diseases in Bangladesh.

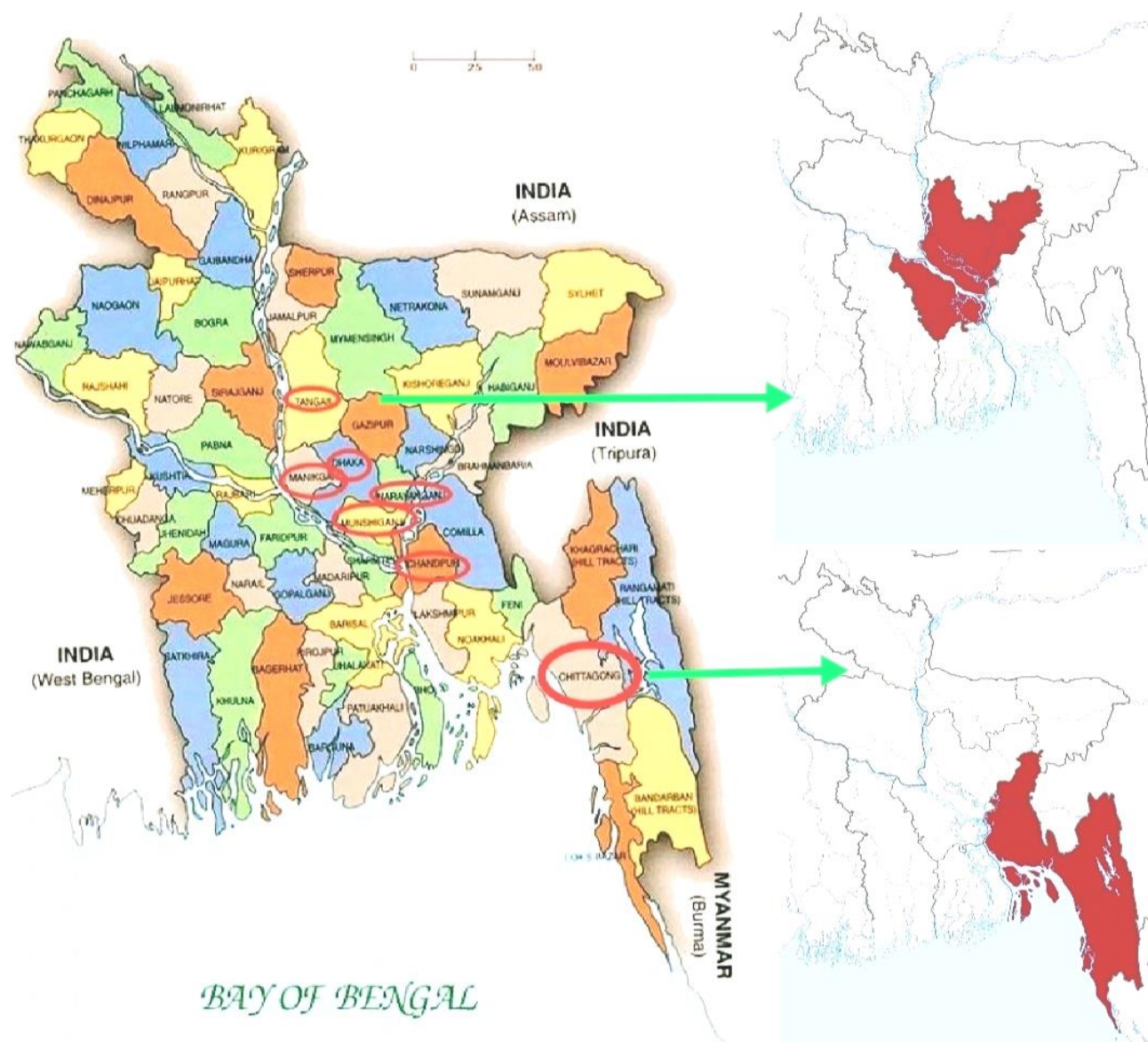


Figure.-1: Map of several districts in Dhaka and Chattogram division.

2.1.2 Demography:

Dhaka is an administrative division in Bangladesh. Dhaka is the largest capital city in this division. The density of the Dhaka division is 1,800/km² (4,600/sq mi) and the population is 36,433,505. This division has a total population of 3,904,471,6, with a male population of 52.15% and a female population of 47.85%. According to the religious view, there are Muslims (92.58%), Hindus (6.97%), Buddhists (0.39%), Christians (0.02%), and others (0.04%). There are 17 districts present in the Dhaka division. Among them, Dhaka, Savar, Narayanganj, Munshiganj, Manikganj, and Tangail districts are present under this division. The region of the Chattogram division is 33,771.18 sq km, placed between 20° 43' and 24° 16' north latitudes. It is bounded through the Dhaka and Sylhet divisions at the north. This division has a total population of 24,290,384, with males accounting for 52.03% and females accounting for 47.97%. According to the religious view, there are Muslims (79%), Hindus (12.65%), Buddhists (7.08%), Christians (0.84%), and others (0.43%). There are 11 districts present in the Chattogram division. Chandpur and Chattogram districts are represented in this division.

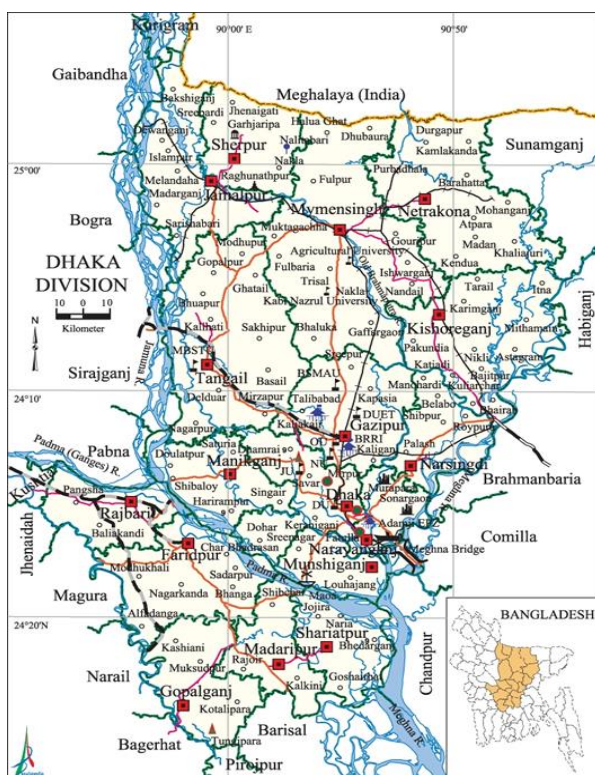


Fig-2. Map of Dhaka Division

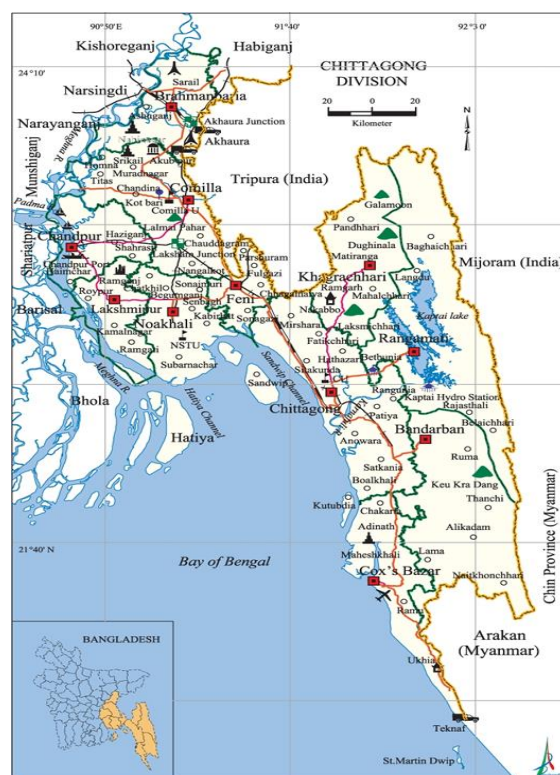


Fig-3. Map of Chattogram Division

2.1.3 Temperature:

The monthly average temperature (°C) varies from 14°C to 34°C throughout the year of 2019. The largest value was found in April and the smallest in January. (Table-1)

Table-1: Monthly average temperature (°C) for the study (Dhaka) area in 2019.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max.	24	28	32	34	33	33	32	32	32	32	29	26
Min.	14	17	21	25	26	27	27	27	27	25	20	16
Average	19	23	27	29	30	30	29	30	29	28	25	21

Source: Bangladesh Metrological Department.

The monthly average temperature (°C) varies from 15°C to 32°C throughout the year of 2019. The largest value was found in May and the smallest in January. (Table-2)

Table-2: Monthly average temperature (°C) for the study (Chattogram) area in 2019.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max.	26	29	31	32	32	31	31	31	32	31	30	27
Min.	15	18	22	25	26	26	26	26	26	25	21	17
Average	21	23	27	29	29	29	28	29	29	28	26	22

Source: Bangladesh Metrological Department.

2.1.4 Climate:

The weather is tropical in Dhaka. The summers right here have a good deal of rainfall, while the winters have very little. The common temperature in Dhaka is 25.9 °C/78.6 °F. In a year, the rainfall is 2022 mm/79.6 inch. Chattogram lies on 12m above sea level. Climate is tropical in Chattogram. Chattogram has enormous rainfall maximum months, with a quick dry season. The common temperature in Chattogram is 25.70 C/78.2 °F. About 2794 mm/110.0 inch of precipitation falls annually.

2.1.5 Humidity:

The average annual relative humidity is 65.8% and common monthly relative humidity levels from 45% in March to 79% in June. (Table-3).

Table-3: Monthly average humidity (%) for the study area (Dhaka) in 2019.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average	54	49	45	55	72	79	79	78	78	72	66	63

Source: Bangladesh Metrological Department.

The average annual relative humidity is 78.0 % and common month-to-month relative humidity stages from 67% in February to 87% in August. (Table-4).

Table-4: Monthly average humidity (%) for the study area (Chattogram) in 2019.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average	70	67	71	78	79	85	86	87	83	81	79	78

Source: Bangladesh Metrological Department

2.1.6 Rainfall:

Monthly average rainfall (mm) varies from 7.7 mm to 373.1 mm through the year of 2019 (Table-5). The highest value was recorded in July and the lowest in January.

Table-5: Monthly average rainfall (mm) for the study area (Dhaka) in 2019.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average	7.7	28.9	65.8	156.3	339.4	340.4	373.1	316.5	300.4	172.3	34.4	12.8

Source: Bangladesh Metrological Department

Monthly average rainfall (mm) varies from 6 mm to 598 mm through the year of 2019 (Table-6). The topmost value was recorded in July and the lowest value in January.

Table-6: Monthly average rainfall (mm) for the study area (Chattogram) in 2019.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average	6	28	63	151	265	533	598	519	321	180	55	16

Source: Bangladesh Metrological Department

2.1.7 Land use pattern:

A precise geographical area is found in Bangladesh, spanning a relatively short stretch of land among the Indian Ocean and Himalayan chain and it is virtually the only drainage outlet for the river basin complex such as the Ganges, Brahmaputra, and Meghna rivers. All homesteads are covered with the dense and lush green foliage of a huge variety of both native and exotic species of trees. Kukursunga (*Blumea lacera*), Sornolota (*Cuscuta reflexa*), Mehdi (*Lawsonia inermis*), Neem (*Azadirachta indica*), Guloncholota (*Tinospora cordifolia*), Bel (*Aegle marmelos*), Ulotkombol (*Abroma augusta*), Basak (*Adhatoda vasica*), Peaz (*Allium cepa*), Rosun (*Allium sativum*), Amoloki (*Phyllanthus emblica*), Arjun (*Terminalia arjuna*), Horitoki (*Terminalia chebula*), Kalomegh (*Andrographis paniculata*), Agor (*Aquilaria malaccensis*), Gach alu (*Dioscorea alata*). Sorpogondha (*Rauwolfia serpentine*), Kagoli lebu (*Citrus aurantifolia*), Chalta (*Dillenia indica*). Helencha (*Enhydra fluctuans*), Kola (*Musa acuminata*), Narikel (*Cocos nucifera*), Kamranga (*Averrhoa carambola*), Tetul (*Tamarindus indica*), Pepe (*Carica papaya*), Kathal (*Artocarpus heterophyllus*), Aam (*Mangifera indica*), are usual in this area. There is plantation of trees such as Thankuni (*Centella asiatica*), Tejpata (*Cinnamomum tamala*), Kagoji lebu (*Citrullus lanatus*), Jolpai (*Elaeocarpus serratus*), Kodom (*Hymenodictyon excelsum*), Joba (*Hibiscus rosa-sinensis*), Sajna (*Moringa oleifera*), Korobi (*Nerium indicum*), Kalojira (*Nigella sativa*), Shiuli (*Nyctanthes arbor tristis*), Shapla (*Nymphaea nouchali*), Peyara (*Psidium guajava*), Dalim (*Punica granatum*), Amra (*Spondias pinnata*), Bohera (*Terminalia bellirica*), Kathbadam (*Terminalia catappa*), Ada (*Zingiber officinale*), Methi (*Trigonella foenum-graecum*), Angur (*Vitis vinifera*), Tulsi (*Ocimum sanctum*), Jogdumur (*Ficus racemosa*), Jambura (*Citrus grandis*) etc are found in homestead area. Both sides of the high road were covered by Babla (*Acacia nilotica*), Lotkon (*Baccaurea motleyana*), Orohor (*Cajanus cajan*), Koromcha (*Carissa congesta*), Sonalu (*Cassia fistula*), Shimul (*Bombax ceiba*), Durba ghash (*Cynodon dactylon*), Mutha ghash (*Cyperus rotundus*), Pipul (*Ficus religiosa*), Pathorkuchi (*Kalanchoe pinnata*), Kola (*Musa paradisiaca*), Dalim (*Punica granatum*), Chinipata (*Scoparia dulcis*), etc.



Photograph of Chattogram



Photograph of Chattogram



Photograph of Manikganj



Photograph of Chattogram city



Photograph of Manikganj



Photograph of Manikganj

Plate-1: Photographs of different views of the study area.



Photograph of Manikganj



Photograph of Manikganj



Photograph of Manikganj



Photograph of Manikganj



Photograph of Chattogram



Photograph of Chattogram

Plate-2: Photographs of different views of the study area



Photograph of Chandpur



Photograph of Chandpur



Photograph of Chandpur



Photograph of Chandpur



Photograph of Chandpur



Photograph of Chandpur

Plate-3: Photographs of different views of the study area



Photograph of Chandpur



Photograph of Manikganj



Photograph of Manikganj



Photograph of Manikganj



Photograph of Chattogram



Photograph of Savar

Plate-4: Photographs of different views of the study area

2.2. Methods:

2.2.1 Field work and data collection:

Eight sampling sites have been selected for data collection in Bangladesh. These are Savar, Dhaka, Narayanganj, Munshiganj, Manikganj, Tangail, Chattogram, and Chandpur. The sampling sites were visited for the duration of the years 2018 and 2019. The visit length for every site lasted for 4-5 days. (Table:7).

Table-7: Field work and plant sample collection in different times of the year.

Number of field trip	Date	Duration	Number of collection
01	24-05-2019	4 days	44
02	20-06-2019	2 days	13
03	14-07-2019	3 days	37
04	26-08-2019	3 days	18
05	21-11-2019	5 days	19

The data on medicinal uses of plants had been recorded via semi-structured interviews, with the assist of natural practitioners and additionally key informant discussions. (Alexiades, 1996). Field interviews, plant interviews, and group discussions with local people had been additionally carried out for the promoting of data collection. During the field survey, records at the uses of plants to deal with humans, modes of preparation, parts used, and management became collected.

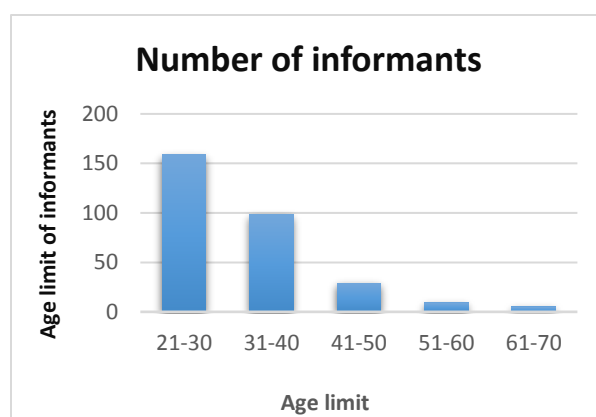
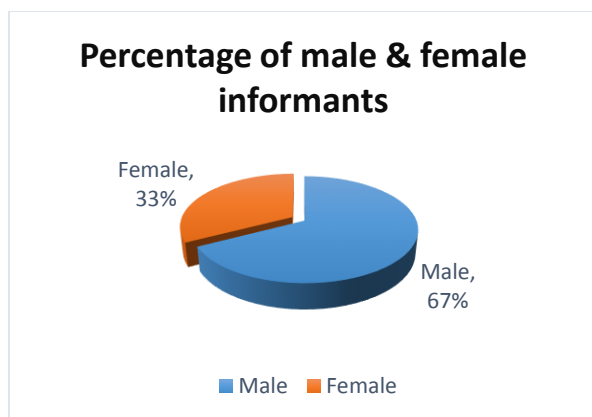


Figure-4: Percentage of informants according to sex.

Figure-5: Showing the number of informants in each group.

A general variety of three hundred informants, which include 67% of males and 33% of females, have been interviewed at some point of the ethnobotanical survey. The local informants have been Housewives, Herbalists, Farmers, Rickshaw pullers, Job-holder Shopkeepers, Teachers, Craftsmen, and additionally Students. The informants have been ranged within 21–70 years old.

2.2.2 Herbarium specimen preparation and identification:

Identification of plant species has been finished by specialists in each the sphere and laboratory. Voucher specimens for every medicinal plant species had been gathered and processed the use of general herbarium techniques (Hyland, 1972). If any confusion takes place in identification, general literature become consulted, and the applicable voucher specimens to be had in Dhaka University Salar Khan Herbarium (DUSH) had been additionally compared. All voucher specimens had been deposited at DUSH.

2.2.3 Data setup:

The data were precised by using Microsoft Office Excel Sheet. For analyzing and summarizing the ethnobotanical data, descriptive statistical methods were applied such as frequency and percentage. On according to the habit, each plant species were characterized into Climbers, Trees, Herbs and Shrubs. Different plant parts are used by the local people as well as herbal practitioners to prepare ethnomedicines was grouped into leaves, fruit, root, bark, whole plant, seed etc. The

total number of ailments were categorized into five groups such as Cardiac complaints, Chest pain, Blood purifier, Antioxidant and High blood pressure.

2.2.4 Data analysis:

Factor of informant consensus (Fic):

For estimating the variety of medicinal plants and determining which plants are valuable in the presence of bioactive compounds, the Factor of informant consensus (Fic) was calculated (Heinrich *et al.*, 1998). Fic is calculated in following equation: $Fic = N_{ur} - N_{taxa} / N_{ur} - 1$, where N_{ur} is the number of use reports in each category and N_{taxa} is the number of species in each category (Trotter and Logan, 1986; Heinrich *et al.*, 1998). A Fic value provides a selection from 0–1, in which an excessive Fic value (near 1) means that there's a well-described group of species used to cure a particular disease category and that facts is exchanged among informants. On the opposite hand, a low Fic value (near 0) suggests that informants disagree over which plants to use because of random deciding on or lack of exchange of facts about using informants. Such analyses classified disorders into groups, such as plant species with a high Fic value, which can be considered more pharmacologically effective than plant species with a low Fic value (Ragupathy *et al.*, 2008).

Fidelity level (Fl):

The Fidelity level, was calculated for the foremost recorded medicinal plant species as: $Fl (\%) = (N_p / N) \times 100$; wherever, N_p = number of informants that declare a use of a plant species to treat a selected diseases. N = number of informants that use the plants as remedy to treat any given disease (Friedman *et al.*, 1986). The Fl values vary from 0-100%. Medicinal plants are widely used by the local individuals for specific ailment have higher Fl values instead of those ar less well-liked for considering as good remedies.

Citation frequency of medicinal plants (Cf %):

Citation frequency become calculated the usage of the subsequent method: frequency of citation for a specific species = (Number of citations for that particular species/ Number of all citations for all species) x 100 (Uddin *et al.*, 2017).

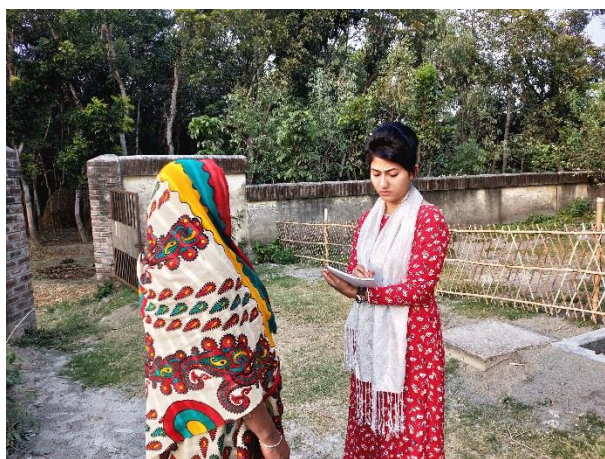


Plate-5 : Photographs of different types of interviews (Key interview)



Plate-6 : Photographs of different types of interviews (Key interview)



Key-interviews



Group interviews



Plate-7 : Photographs of different types of interviews (Key interview)



Plate-8 : Photographs of Plant collection



Local market survey



Plant interview

Plate-9 : Photographs of different types of interviews.



Plate-10: Photographs of voucher specimen collection and identification.

Results

2.3. Results:

The recent ethnobotanical survey has reported a total number of 131 medicinal plants with 61 families that had been received through conducting 300 interviews with 114 formularies for the treatment of cardiovascular disease. For each species, the scientific name, local name, family, habit, parts used, ailments, and treatment mode have been provided (Table-8). It is a preliminary investigation. The study area still has a huge source of knowledge about the uses of medicinal plants. That specific knowledge has been inherited orally from generation to generation.

Table-8: Ethnobotanical data on medicinal plants and uses in the study area.

Scientific name	Local name	Family	Habitat	Parts use	Ailments	Treatment mode
<i>Abelmoschus esculentus</i> (L.) Moen.	Dherosh	Malvaceae	Herb	Fruit	Antioxidant	Cooked fruit is taken as vegetable.
					Blood purifier	Cooked fruit is taken as vegetable.
					Cardiac complaints	Cooked fruit is taken as vegetable.
<i>Abroma augusta</i> (L.) L. f.	Ulat-kambal.	Sterculiaceae.	Shrub	Leaves	Cardiac complaints	Leaf juice is taken.
	Babla	Mimosaceae	Tree	Bark	High blood pressure	Bark juice is taken.
<i>Acacia nilotica</i> (L.) Delile ssp.				Leaves	High blood pressure	Leaf juice is taken.
					Blood purifier	Leaf juice is taken.
<i>Acalypha indica</i> L.	Muktajhuri	Euphorbiaceae	Shrub	Leaves	Blood purifier	Leaf juice is taken.
				Root	Blood purifier	Root juice is taken
<i>Achyranthes aspera</i> L.	Apang	Amaranthaceae	Herb	Seed	Chest pain	One gm of seed powder is taken.
				Leaves	Cardiac complaints	One ml of leaf juice is taken with cold water.

<i>Acorus calamus</i> L.	Boch	Araceae	Herb	Rhizome	Antioxidant	Powder is used in cooking. Soaked in water overnight and then water is taken in the morning. Leaf juice is taken.
				Rhizome	Cardiac complaints	
<i>Adhatoda zeylanica</i> Medikus.	Basak	Acanthaceae	Shrub	Leaves	Blood purifier	6-12 gm root powder is taken with milk.
<i>Aegle marmelos</i> (L.) Corr.	Bel	Rutaceae	Tree	Root	Cardiac complaints	One ml of juice is taken. Young bulb is taken directly.
<i>Allium cepa</i> L.	Piaj	Liliaceae	Herb	Bulb	Blood purifier	Leaves are taken as vegetable.
				Leaves	Cardiac complaints High blood pressure	2 pieces of bulb is taken everyday. Paste is taken internally with boiled rice.
<i>Allium sativum</i> L.	Rosun	Liliaceae	Herb	Bulb	Cardiac Complaints High blood pressure	Leaf juice is taken. Latex paste is eaten with honey. Latex is taken as vegetable. Latex pieces is taken internally.
<i>Aloe vera</i> (L.) Burm. f.	Alovera	Aloaceae	Herb	Leaf	Antioxidant	Latex paste is eaten with honey. Latex is taken as vegetable. Latex pieces is taken internally.
				Latex	Blood purifier	50 gm bark powder is taken with hot water twice in a day.
				Latex	Cardiac complaints High blood pressure	Cooked plant is taken as vegetable. Cooked plant is taken as vegetable. Cooked plant is taken as vegetable.
<i>Alstonia scholaris</i> R. Br.	Chatim	Apocynaceae	Tree	Bark	High blood pressure	Cooked plant is taken as vegetable.
<i>Alternanthera sessilis</i> (L.) R.Br.	Kathapata shak	Amaranthaceae	Herb	Whole plant	Chest pain	Cooked plant is taken as vegetable.
<i>Amaranthus gangeticus</i> L.	Lalsak	Amaranthaceae	Herb	Whole plant	Antioxidant	Cooked plant is taken as vegetable.
					Blood purifier	Cooked plant is taken as vegetable.
					Cardiac complaints	Cooked plant is taken as vegetable.

					High blood pressure	Cooked plant is taken as vegetable.
<i>Amaranthus spinosus</i> L.	Katanote shak	Amaranthaceae	Herb	Whole plant	Blood purifier	Cooked plant is taken as vegetable.
<i>Amaranthus viridis</i> L.	Noteshak	Amaranthaceae	Herb	Whole plant	Blood purifier	Cooked plant is taken as vegetable.
<i>Anacardium occidentale</i> L.	Kajubadam	Anacardiaceae	Tree	Seed	Cardiac Complaints	Fried seed is taken.
<i>Andrographis paniculata</i> Nees	Kalomegh	Acanthaceae	Herb	Leaves	Antioxidant	Leaf juice is taken with honey.
					Blood purifier	Leaf juice is taken.
<i>Aquilaria malaccensis</i> Lam.	Agor	Thymelaeaceae	Tree	Bark	Cardiac complaints	2/3 gram bark powder is taken with milk twice in a day.
<i>Arachis hypogaea</i> L.	China badam	Fabaceae	Herb	Seed	Antioxidant	Fried seed is taken.
					Blood purifier	5/10 seed soaked in water overnight and take the water with seed.
					Cardiac Complaints	Seed juice is taken.
					High blood pressure	Seed paste is taken with boiled rice.
<i>Artabotrys hexapetalus</i> (L.f.) Bhandari	Kathalichapa	Annonaceae	Shrub	Flower	Blood purifier	Flower powder is taken in empty stomach with water twice in a day.
<i>Artocarpus heterophyllus</i> Lamk.	Kathal	Moraceae	Tree	Seed	Antioxidant	Seed paste is taken with boiled rice.
				Fruit	Blood purifier	Young fruit is taken as vegetable.
					Cardiac complaints	Ripe Fruit is taken.
					High blood pressure	Ripe Fruit is taken.
<i>Asclepias curassavica</i> (L.)	Bon-karpash	Asclepiadaceae	Shrub	Leaves	Chest pain	Leaf juice is taken with honey twice in a day with empty stomach.

<i>Asparagus racemosus</i> Willd.	Satamuli	Asparagaceae	Climber	Leaves	Antioxident	5/7 gram boiled leaf is taken.
				Root	Chest pain	2/3 ml root juice is taken with half cup of raw milk and drink it in empty stomach.
<i>Averrhoa bilimbi</i> L.	Bilombo	Oxalidaceae	Tree	Leaves	Antioxident	Leaf paste is taken in empty stomach.
				Fruit	High blood pressure	Fruit is taken with salt.
<i>Averrhoa carambola</i> L.	Kamranga	Oxalidaceae	Tree	Fruit	Antioxidant	Fruit is preserved as pickles.
					Cardiac complaints	Ripe Fruit is taken.
<i>Azadirachta indica</i> A. Juss.	Neem	Meliaceae	Tree	Leaves	High blood pressure	Fruit juice is taken.
					Blood purifier	Young leaf juice is taken.
<i>Baccaurea ramiflora</i> Lour.	Lotkon	Euphorbiaceae	Tree	Fruit	Cardiac Complaints	Fruit juice is taken
					Antioxidant	Cooked leaf is taken as vegetable.
<i>Bacopa monniera</i> (L.) Pennel.	Brahmami shak	Scrophulariaceae	Herb	Leaves	High blood pressure	Cooked leaf is taken as vegetable.
					Antioxidant	Cooked leaf is taken as vegetable.
<i>Basella alba</i> L.	Puisak	Basellaceae.	Climber	Leaves	Antioxidant	Cooked leaf is taken as vegetable.
					Cardiac Complaints	Leaf juice is taken.
<i>Benincasa hispida</i> (Thub.) Cogn.	Chal kumra	Cucurbitaceae	Climber	Leaves	High blood pressure	Boiled leaf is taken.
					Blood purifier	Cooked fruit is taken as vegetable.
<i>Blumea lacera</i> (Burn. f.) DC.	Kukursungha	Asteraceae	Herb	Leaves	Antioxidant	Cooked leaf is taken as vegetable.
<i>Boerhaavia diffusa</i> L.	Punornova	Nyctaginaceae	Herb	Leaves	Cardiac Complaints	5-10 ml leaf juice is taken twice in a day.
<i>Bombax ceiba</i> L.	Shimul	Bombacaceae	Tree	Root	Blood purifier	1/2 gm root powder is taken with goat milk twice in a day.

<i>Brassica capitata</i> L.	Badhakopi	Brassicaceae	Herb	Leaves	Blood purifier Cardiac Complaints	Leaf is taken as salad. Cooked leaf is taken as vegetable.
<i>Brassica nigra</i> (L.) Koch.	Sorisha shak	Brassicaceae	Herb	Leaves	Cardiac Complaints	Cooked leaf is taken as vegetable.
<i>Brassica oleracea</i> L.	Fulkopi	Brassicaceae	Herb	Fruit	Antioxidant Blood purifier Cardiac Complaints	1 cup boiled fruit is taken with salt. Cooked fruit is taken as vegetable. Boiled fruit paste is taken with rice.
<i>Cajanus cajan</i> (L.) Millsp.	Orhor	Fabaceae	Shrub	Seed	Blood purifier Cardiac Complaints	Boiled leaf juice is taken. Cooked seed is taken.
<i>Camellia sinensis</i> (L.) O. Kuntze	Green tea	Theaceae	Shrub	Leaves	Antioxidant Blood purifier Cardiac Complaints High blood pressure	Boiled leaf juice is taken. Boiled leaf juice is taken. Boiled leaf juice is taken.
<i>Cardiospermum halicacabum</i> L.	Bontepari	Sapindaceae	Herb	Whole plant Fruit	Antioxidant Cardiac Complaints	One ml of juice is taken with one spoon of water. 4/5 fruit is boiled with water and the juice is taken.
<i>Carica papaya</i> L.	Pepe	Caricaceae	Shrub	Leaves Fruit	Antioxidant Blood purifier Cardiac Complaints	Leaf juice is taken. Young fruit is taken as salad. Young fruit is taken as vegetable.
<i>Carissa congesta</i> Wight.	Koromcha	Apocynaceae	Tree	Fruit Root	High blood pressure Cardiac Complaints High blood pressure	Ripe Fruit is taken. Fruit is taken with salt. Root juice is taken
<i>Cassia fistula</i> L.	Sonalu	Caesalpiniaceae	Tree	Leaves Fruit	Antioxidant High blood pressure	Leaf juice is taken. 4/5 gm fruit is taken with half

<i>Cassia occidentalis</i> L.	Kolkasunda	Caesalpiniaceae	Herb	Flower	Chest pain	cup of milk and drink the mixture twice in a day. One gram dried flower powder is taken with milk twice in a day.
<i>Catharanthus roseus</i> (L.) G. Don	Noyontara	Apocynaceae	Herb	Leaves	Blood purifier	Leaf juice is taken.
				Root	High blood pressure	Root juice is taken with empty stomach.
<i>Centella asiatica</i> (L.) Urban.	Thankuni	Apiaceae	Herb	Leaves	Blood purifier	4 ml leaf juice is taken with one spoon honey and drink the mixture in empty stomach.
<i>Chenopodium album</i> L.	Bothua shak	Amaranthaceae	Herb	Whole plant	Blood purifier	Cooked plant is taken as vegetable.
<i>Cinnamomum tamala</i> Nees & Eberm.	Tejpata	Lauraceae	Tree	Leaves	Antioxidant	Dried leaf powder is used as spice.
					Blood purifier	Soaked in hot water overnight and then water is taken in the next day morning.
					Cardiac Complaints	3 gm leaf powder mixed with 300 ml water boiled for few minutes and drink the juice.
<i>Cinnamomum verum</i> Presl.	Darchini	Lauraceae	Tree	Bark	Antioxidant	Bark powder is taken as spice.
					Blood purifier	Bark powder is taken with honey.
					Cardiac Complaints	Bark is soaked with water overnight and then water is taken in the next morning

<i>Cissus quadrangularis</i> L.	Harjora	Lauraceae	Tree	Leaves	High blood pressure	in empty stomach. Leaf juice is taken.
<i>Citrullus lanatus</i> (Thumb.) Marts.	Tormujh	Cucurbitaceae	Herb	Fruit	Antioxidant Cardiac Complaints High blood pressure	Outer surface of the fruit is taken as salad. Ripe Fruit is taken. Young Fruit is taken as vegetable.
<i>Citrus aurantifolia</i> (Christm. & Panzer) Swingle.	Kagojilebu	Rutaceae	Shrub	Fruit	Antioxidant Chest pain High blood pressure	Fruit juice is taken. One ml of fruit juice is taken with half glass of water. Outer surface of the fruit is taken as salad.
<i>Citrus grandis</i> (L.) Osbeck.	Jambura	Rutaceae	Tree	Fruit	Antioxidant Blood purifier High blood pressure	Ripe Fruit is taken. Outer surface of the fruit is taken as salad. Fruit juice is taken.
<i>Citrus reticulata</i> Blanco.	Komola lebu	Rutaceae	Shrub	Fruit	Antioxidant Cardiac Complaints High blood pressure	Outer surface of the fruit is taken as salad. Ripe Fruit is taken. Fruit juice is taken.
<i>Cocos nucifera</i> L.	Narikel	Arecaceae	Tree	Fruit	Antioxidant Blood purifier Cardiac Complaints High blood pressure	Cooked copra is taken with sugar. Young fruit is taken. Young fruit is taken in empty stomach. Young fruit juice is taken.
<i>Corchorus capsularis</i> L.	Path shak	Tiliaceae	Herb	Leaves	Antioxidant Blood purifier	Cooked leaf is taken as vegetable. Cooked leaf is taken as vegetable.

					Cardiac Complaints	Cooked leaf is taken as vegetable.
					High blood pressure	Cooked leaf is taken as vegetable.
<i>Coriandrum sativum</i> L.	Dhonia	Apiaceae	Herb	Leaves	Antioxidant	Leaf juice is taken.
				Seed	Blood purifier	Soaked in water then the water is taken.
				Leaves	High blood pressure	Leaf paste is taken with boiled rice.
<i>Croton bonpladianus</i> Baill.	Bon tulshi	Euphorbiaceae	Shrub	Leaves	Antioxidant	Leaf juice is taken with honey in empty stomach.
					Cardiac Complaints	Fresh leaf is chewed in every morning with empty stomach.
<i>Cucumis sativus</i> L.	Sosha	Cucurbitaceae	Herb	Fruit	Cardiac Complaints	Fruit is taken as salad.
<i>Cucurbita maxima</i> Duch, ex Lamk.	Mistikumra	Cucurbitaceae	Herb	Fruit	Antioxidant	1 glass fruit juice is taken with honey 3 times in a day.
				Seed	Blood purifier	Seed paste is taken.
				Fruit	High blood pressure	Cooked fruit is taken as vegetable.
<i>Curcuma longa</i> L.	Holud	Zingiberaceae	Herb	Rhizome	Antioxidant	Juice is taken with milk.
					Blood purifier	Juice is taken.
					Cardiac Complaints	Powder is used in cooking.
<i>Cuscuta reflexa</i> Roxb.	Sornalota	Cuscutaceae	Herb	Stem	Blood purifier	Stem juice is taken.
<i>Cynodon dactylon</i> Pers.	Durba ghash	Poaceae	Herb	Leaves	Blood purifier	Leaf juice is taken with goat milk.
<i>Cyperus rotundus</i> L.	Mutha ghash	Cyperaceae	Herb	Leaves	Blood purifier	One spoon of leaf juice is taken in empty stomach.
<i>Daucus carota</i> L.	Gajor	Apiaceae	Herb	Tuber	Antioxidant	Juice is taken.
					Blood purifier	Tuber is taken as salad.
					Cardiac Complaints	Tuber is taken.
<i>Dillenia indica</i> L.	Chalta	Dilleniaceae	Tree	Fruit	Antioxidant	Fruit is taken as vegetable.

						Blood purifier	Fruit juice is taken with warm water.
						Cardiac Complaints	Fruit is preserved as pickles.
<i>Dioscorea alata</i> L.	Gach alu	Dioscoreaceae	Shrub	Fruit	High blood pressure		Cooked fruit is taken as vegetable.
<i>Diplazium esculentum</i> L.	Dheki shak	Polypodiaceae	Herb	Leaves	High blood pressure		Cooked leaf is taken as vegetable.
<i>Eclipta alba</i> (L.) Hassk.	Keshraj	Asteraceae	Herb	Leaves	Blood purifier		One spoon of leaf juice is taken with one cup of water.
<i>Elaeocarpus serratus</i> L.	Jolpai	Elaeocarpaceae	Tree	Leaves	Antioxidant		Leaf juice is taken.
				Fruit	Blood purifier		Fruit is preserved as pickles.
					Cardiac Complaints		Fruit is taken.
					High blood pressure		Cooked fruit is taken as vegetable.
<i>Elettaria cardamomum</i> (L.) Maton	Elach	Zingiberaceae	Herb	Seed	Antioxidant		4/8 pieces seed soaked in water overnight and take it next morning in empty stomach
					Blood purifier		Seed is chewed in empty stomach.
					High blood pressure		Seed powder is taken as spice.
<i>Enhydra fluctuans</i> Lour.	Helencha	Asteraceae	Herb	Leaves	Antioxidant		Cooked leaf is taken as vegetable.
					Blood purifier		20 ml leaf juice is taken with one spoonful of sugar.
					High blood pressure		2 ml of leaf juice is taken with 2 ml of kolmi juice and 2 ml of honey.
<i>Ficus racemosa</i> L.	Jogdumur	Moraceae	Tree	Leaves	Antioxidant		Young leaf is chewed with boiled rice 3 times in a day.

				Bark	Blood purifier	2 ml of bark juice is taken with honey.
				Fruit	High blood pressure	Cooked fruit is taken as vegetable.
<i>Ficus religiosa</i> L.	Pipal	Moraceae	Tree	Root	Blood purifier	2 gm of root powder is taken with one ml of water.
				Fruit	Cardiac Complaints	Fruit powder is taken with water.
				Leaves	High blood pressure	Leaf powder is taken with water.
<i>Helianthus annuus</i> L.	Surjomukhi	Asteraceae	Herb	Seed	Cardiac Complaints	Seed oil is used in cooking.
<i>Hemidesmus indicus</i> (L.) R. Br.	Onontomul	Asteraceae	Herb	Root	Blood purifier	1-3 gm root powder is taken after meal twice a day.
<i>Hibiscus rosa-sinensis</i> L.	Joba	Malvaceae	Shrub	Flower	Antioxidant	Dried flower powder is taken with boiled water.
					Blood purifier	Dried flower powder is taken with boiled water.
					High blood pressure	Dried flower powder is taken with boiled water.
<i>Hymenodictyon excelsum</i> Wall.	Bhui kodom	Rubiaceae	Tree	Bark	Antioxidant	Bark is soaked with water overnight and then water is taken in the next morning in empty stomach.
					High blood pressure	Bark is soaked with water overnight and then water is taken in the next morning in empty stomach.
<i>Hyptis suaveolens</i> (L.) Poit.	Tokma	Lamiaceae	Herb	Seed	Cardiac Complaints	1 spoonful of seed is soaked with water overnight and then water is

<i>Ipomoea aquatica</i> Forssk.	Kalmi shak	Convolvulaceae	Herb	Leaves	Antioxidant	taken in the next morning in empty stomach. Cooked leaf is taken as vegetable.
<i>Ipomoea batatas</i> Lamk.	Misti alu	Convolvulaceae	Herb	Tuber	Antioxidant Blood purifier	Boiled tuber is taken. Boiled tuber is taken with boiled rice. Fried tuber is taken.
<i>Kalanchoe pinnata</i> (Lamk.) Pres	Pathorkuchi	Crassulaceae	Shrub	Leaves	Cardiac Complaints High blood pressure	Leaf juice is taken.
<i>Lablab purpureus</i> (L.) Sweet	Shim	Fabaceae	Climber	Seed	Antioxidant	Cooked seed is taken.
				Flower	Blood purifier	Flower is taken with salt.
				Fruit	Cardiac Complaints High blood pressure	Fruit paste is taken with boiled rice. Cooked fruit is taken as vegetable.
<i>Lactuca sativa</i> L.	Lettuce pata	Asteraceae	Herb	Leaves	Antioxidant Blood purifier Cardiac Complaints	Leaf juice is taken. Leaf is taken as salad. Leaf powder is taken for flavouring food.
<i>Lagenaria siceraria</i> (Mol.) Stan.	Lau	Cucurbitaceae	Herb	Leaves	Blood purifier	Leaf is taken as vegetable.
				Fruit	Cardiac Complaints High blood pressure	Boiled fruit paste is taken with boiled rice. Fruit is taken as vegetable.
<i>Lawsonia inermis</i> L.	Mehdi	Lythraceae	Shrub	Leaves	Blood purifier	Dried leaf powder is taken with boiled water.
<i>Lens culinaris</i> Medic. in Vor.	Musur dal	Fabaceae	Herb	Seed	Blood purifier Cardiac Complaints High blood pressure	Boiled seed is taken. Boiled seed is taken. Boiled seed paste is taken with boiled rice.

<i>Lycopersicon lycopersicum</i> (L.) Farewell.	Tomato	Solanaceae	Herb	Fruit	Antioxidant	Young fruit is taken.
					Blood purifier	Fruit is taken as salad.
					High blood pressure	Young Fruit is taken as vegetable.
<i>Malus domestica</i> Borkh.	Apel	Rosaceae	Tree	Fruit	Antioxidant	3 fruits are taken in empty stomach.
					Cardiac Complaints	At least one fruit is taken everyday.
					High blood pressure	Fruit is taken as salad.
<i>Mangifera indica</i> L.	Aam	Anacardiaceae	Tree	Leaves	Antioxidant	Dried leaf powder is taken twice in a day.
				Seed	Blood purifier	Seed paste is taken with boiled rice.
				Fruit	Cardiac Complaints	Ripe Fruit is taken.
				Leaves	High blood pressure	5-12 leaves are boiled with water and take water in an empty stomach.
<i>Mentha spicata</i> L.	Pudina	Lamiaceae	Herb	Leaves	Antioxidant	6/7 leaves are taken with boiled with water.
					Blood purifier	Leaf juice is taken.
					Cardiac Complaints High blood pressure	Leaf is taken as salad. 2 leaves are chewed in every morning with empty stomach.
<i>Momordica charantia</i> L.	Korola	Cucurbitaceae	Herb	Fruit	Antioxidant	Fruit juice is taken with one spoonful of honey in an empty stomach.
					Blood purifier	Cooked fruit is taken as vegetable.
					Cardiac Complaints	Boiled food paste is taken

<i>Moringa oleifera</i> Lamk.	Sajna	Moringaceae	Tree	Leaves	High blood pressure Antioxidant Blood purifier Cardiac Complaints	with boiled rice. Fruit juice is taken. 2-5 leaves are chewed in empty stomach. 7 gm leaf powder is taken with water everyday. Leaf paste is taken with boiled rice.
<i>Murraya koenigii</i> (L.) Spreng.	Karipata	Rutaceae	Shrub	Leaves	High blood pressure Antioxidant Blood purifier	Leaf is taken as vegetable. One cup leaf juice is taken with butter and black pepper. 4 fresh leaves are taken in empty stomach.
<i>Musa paradisiaca</i> L.	Kola	Musaceae	Tree like	Leaves Flower Fruit	Cardiac Complaints Blood purifier Chest pain Cardiac Complaints	Leaf juice is taken. Leaf is taken as vegetable. Flower juice is taken at least for 15 days. Young Fruit is taken as vegetable.
<i>Nerium indicum</i> Mill.	Korobi	Apocynaceae	Tree	Root	High blood pressure Cardiac Complaints	Ripe Fruit is taken. 500 gm root powder is taken with honey.
<i>Nigella sativa</i> L.	Kalajira	Ranunculaceae	Herb	Seed	Blood purifier Cardiac Complaints High blood pressure	Seed paste is taken with boiled rice. One ml of seed oil is taken with one cup of milk. One ml of seed oil is taken with one spoon of honey.
<i>Nyctanthes arbor-tristis</i> L.	Shiuli	Verbenaceae	Shrub	Leaves	Antioxidant	Boiled leaf juice is taken.

					Blood purifier	Leaf juice is taken with honey.
<i>Nymphaea nouchali</i> Burm. F.	Shapla	Nymphaeaceae	Tree	Flower	Cardiac Complaints	Flower is taken as vegetable.
<i>Ocimum tenuiflorum</i> L.	Tulshi	Lamiaceae	Herb	Leaves	Antioxidant	4/5 young leaves are chewed in empty stomach.
					Blood purifier	Leaf juice is taken with honey.
<i>Oldenlandia corymbosa</i> L.	Khetpapra	Rubiaceae	Herb	Leaves	Blood purifier	Boiled leaf juice is taken.
<i>Oryza sativa</i> L.	Dhan	Poaceae	Herb	Seed	Cardiac Complaints	Boiled seed is taken.
<i>Phyllanthus emblica</i> L.	Amloki	Euphorbiaceae	Tree	Fruit	Antioxidant	Fruit is taken.
					Blood purifier	Fruit is preserved as pickles.
					Cardiac Complaints	Fruit juice is taken.
					High blood pressure	Fruit powder is taken with milk everyday.
<i>Piper nigrum</i> L.	Golmorich	Piperaceae	Climber	Fruit	Antioxidant	Fruit powder is used as spice.
					High blood pressure	One gm of fruit powder is boiled with two spoon of honey and then the mixture is taken.
<i>Polyalthia longifolia</i> (Sonn.) Thw.	Debdaru	Annonaceae	Tree	Bark	Cardiac Complaints	3-4 gram bark powder is taken with boiled water.
<i>Psidium guajava</i> L.	Peyara	Myrtaceae	Tree	Leaves	Antioxidant	Leaf juice is taken in empty stomach.
				Fruit	Blood purifier	Ripe fruit is taken.
					High blood pressure	Young fruit is taken as salad.
<i>Punica granatum</i> L.	Dalim	Lythraceae	Shrub	Fruit	Antioxidant	Fruit juice is taken.
					Blood purifier	Dried fruit surface powder is taken with water.
					Chest pain	Ripe fruit is taken.

<i>Raphanus sativus</i> (L.) Domin	Mula	Brassicaceae	Herb	Leaves	Cardiac Complaints High blood pressure Antioxidant	Fruit juice is taken. Fruit is taken as salad. Leaf juice is taken with honey.
				Tuber	Blood purifier	Boiled fruit is taken with salt. Cooked fruit is taken as vegetable.
				Leaves	High blood pressure Cardiac Complaints	Leaf is taken as vegetable. Root powder is taken after meal twice in a day.
<i>Rauwolfia serpentina</i> (L.) Benth. ex Kurz	Sarpagandha	Apocynaceae	Shrub	Root	High blood pressure Cardiac Complaints	Leaf juice is taken. Root powder is taken after meal twice in a day.
				Leaves	High blood pressure Blood purifier	Leaf juice is taken. 6 gm leaf crushed is taken with 60 ml water.
<i>Rosa centifolia</i> L.	Golap	Rosaceae	Tree	Leaves	Blood purifier	Bark soaked with water overight and then water is taken in empty stomach.
<i>Saraca asoca</i> (Roxb.) de Wild.	Ashok	Fabaceae	Tree	Bark	Blood purifier	Bark soaked with water overight and then water is taken in empty stomach.
<i>Scoparia dulcis</i> L. <i>Solanum melongena</i> L.	Chinipata	Scrophulariaceae	Herb	Leaves	High blood pressure Antioxidant	Leaf juice is taken. Fried fruit is taken.
	Begun	Solanaceae	Shrub	Fruit	Blood purifier Cardiac Complaints High blood pressure	Boiled fruit is taken with salt. Fruit is taken as vegetable. Boiled fruit paste is taken with boiled rice.
<i>Spilanthes paniculata</i> Wall.	Ushni shak	Asteraceae	Herb	Leaves	High blood pressure	Cooked leaf is taken as vegetable.
<i>Spinacia oleracea</i> L.	Palong shak	Amaranthaceae	Herb	Leaves	Antioxidant	Leaf juice is taken.
					Cardiac Complaints High blood pressure	Boiled leaf paste is taken with boiled rice. Cooked leaf is taken as vegetable.
<i>Spondias pinnata</i> (L. f.) Kurz.	Amra	Anacardiaceae	Tree	Fruit	Antioxidant	Fruit is taken.

<i>Syzygium cumini</i> (L.) Skeels	Jam	Myrtaceae	Tree	Fruit	Blood purifier	Fruit juice is taken.
					Cardiac Complaints	Cooked fruit is taken as vegetable.
				Seed	Antioxidant	Ripe Fruit is taken.
<i>Tamarindus indica</i> L.	Tetul	Fabaceae	Tree	Fruit	Blood purifier	One gm of seed powder is taken in empty stomach.
					High blood pressure	Fruit juice is taken.
				Leaves	Antioxidant	Fruit is preserved as pickles.
<i>Terminalia arjuna</i> (Roxb. Ex DC.) Wight & Arn.	Arjun.	Combretaceae.	Tree		Blood purifier	Leaf is taken with boiled water.
					Cardiac Complaints	Ripe Fruit is taken.
					High blood pressure	Fruit juice is taken.
<i>Terminalia bellirica</i> (Gaertn.) Roxb.	Bohera	Combretaceae.	Tree	Bark	Chest pain	Decocted with water and then drunk the water.
					Cardiac Complaints	Bark powder is taken in empty stomach.
					High blood pressure	Soaked in water overnight and then water is taken in the morning.
<i>Terminalia catappa</i> L.	Kath badam	Combretaceae.	Tree	Seed	Antioxidant	Soaked in water overnight and then water is taken in the morning.
					Blood purifier	Boiled seed paste is taken with boiled rice.
					Cardiac Complaints	Soaked in water overnight and then seed is taken in the morning.
					Cardiac Complaints	Seed is taken.

<i>Terminalia chebula</i> Retz.	Horitaki	Combretaceae.	Tree	Fruit	High blood pressure	Seed juice is taken with milk.
					Blood purifier	Soaked in water overnight and then water is taken in the morning.
					Cardiac Complaints	Dried fruit powder mixed with Amloki and Bohera powder in water and drink the mixture in empty stomach.
<i>Thevetia peruviana</i> (Pers.) K. Sehum.	Kolke	Apocynaceae	Shrub	Root	High blood pressure	Decocted with water and then drunk the water.
					Cardiac Complaints	One gram root powder is taken with boiled milk.
<i>Tinospora crispa</i> (L.) Hook. f. & Thoms.	Guloncholota	Menispermaceae	Herb	Leaves	Blood purifier	10-12 gm leaf powder is taken with one cup of water for 30 days.
<i>Trichosanthes dioica</i> Roxb.	Potol	Cucurbitaceae	Climber	Seed	Antioxidant	Seed paste is taken with boiled rice.
				Fruit	Blood purifier	Boiled fruit paste is taken with boiled rice.
<i>Trigonella foenum-graecum</i> L.	Methi	Fabaceae	Herb	Seed	Cardiac Complaints	Fruit is taken as vegetable.
					Antioxidant	Leaf is taken as vegetable.
					Blood purifier	Soaked in water overnight and then water is taken in the morning.
					Cardiac Complaints	Seed paste is taken with boiled rice.
					High blood pressure	Seed powder is taken with water.

<i>Triticum asetivum</i> L	Gom	Poaceae	Herb	Seed	Blood purifier	Boiled seed is taken with milk.
				Leaves	Cardiac Complaints	Leaf juice is taken in empty stomach.
<i>Vigna sesquipedalis</i> (L.) Walp.	Borboti	Fabaceae	Climber	Fruit	Antioxidant	Cooked fruit is taken as vegetable.
					Chest pain	Boiled fruit is taken as salad.
					Cardiac Complaints	Boiled fruit paste is taken with boiled rice.
					High blood pressure	Boiled seed paste is taken with boiled rice.
<i>Vitis vinifera</i> L.	Angur	Vitaceae	Climber	Fruit	Antioxidant	Fruit is taken.
					Blood purifier	Fruit juice is taken.
					Cardiac Complaints	Young fruit is preserved as pickles.
<i>Zea mays</i> L.	Vutta	Poaceae	Herb	Fruit	Antioxidant	Fried fruit is taken.
					Blood purifier	Seed is take as popcorn.
					Cardiac Complaints	Boiled seed is taken as vegetable.
					High blood pressure	Dried seed powder is taken with water.
<i>Zingiber officinale</i> Rosc.	Ada	Zingiberaceae	Herb	Rhizome	Blood purifier	Rhizome is taken with salt.
					Chest pain	2 inch rhizome is boiled with 2 cup of water and the water is taken.
					Cardiac Complaints	Juice is taken with honey.

Among the 131 plant species in the review region, herbs have been addressed by 41%, trees 33%, shrub 19%, and climbers 7% (Fig. 6). The final results reflected that herbs are the most prevalent life form of many of the medicinal plants in the review region. Leaves were the most used plant part, with 35% application in traditional medicinal, followed by fruit (26%), seed (12%), root (6%), bark (5%), whole plant (5%), flower (4%), rhizome (2%), tuber (1%), bulb (1%), latex (1%), and stem (1%).

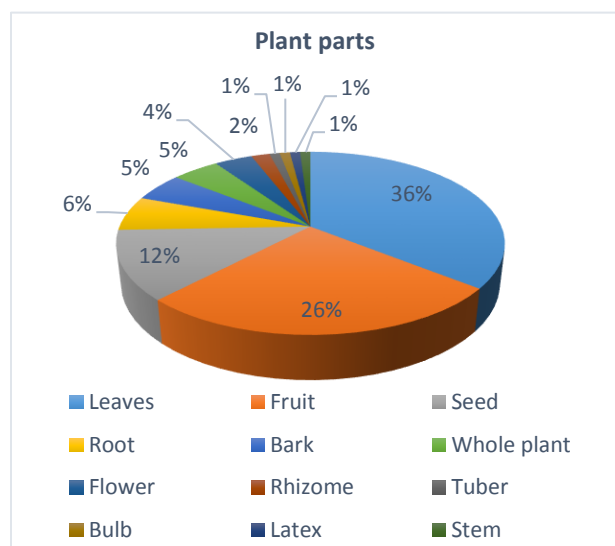


Fig. 6. Proportion of parts used of medicinal plant species

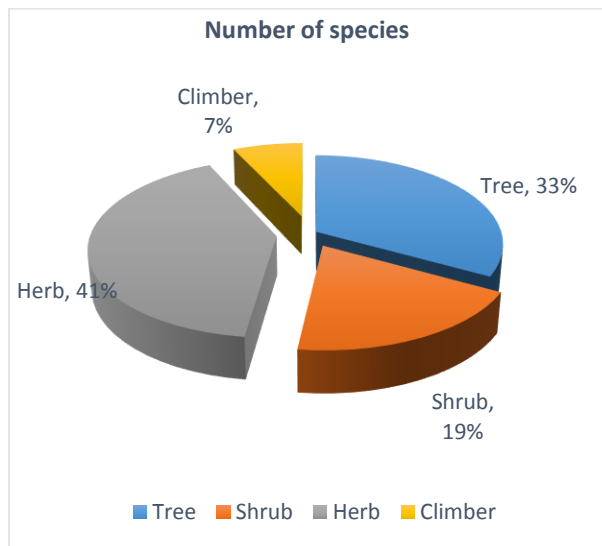


Fig. 7. Habit diversity

In this present study, 61 medicinal plant families had been discovered for the remedy of cardiovascular diseases. Medicinal plants from the families were found to belong to a high number of species in Fabaceae, Amaranthaceae, Asteraceae, Cucurbitaceae, and Apocynaceae. Those were the most dominant, with the maximum number of medicinal plant species in the study area.

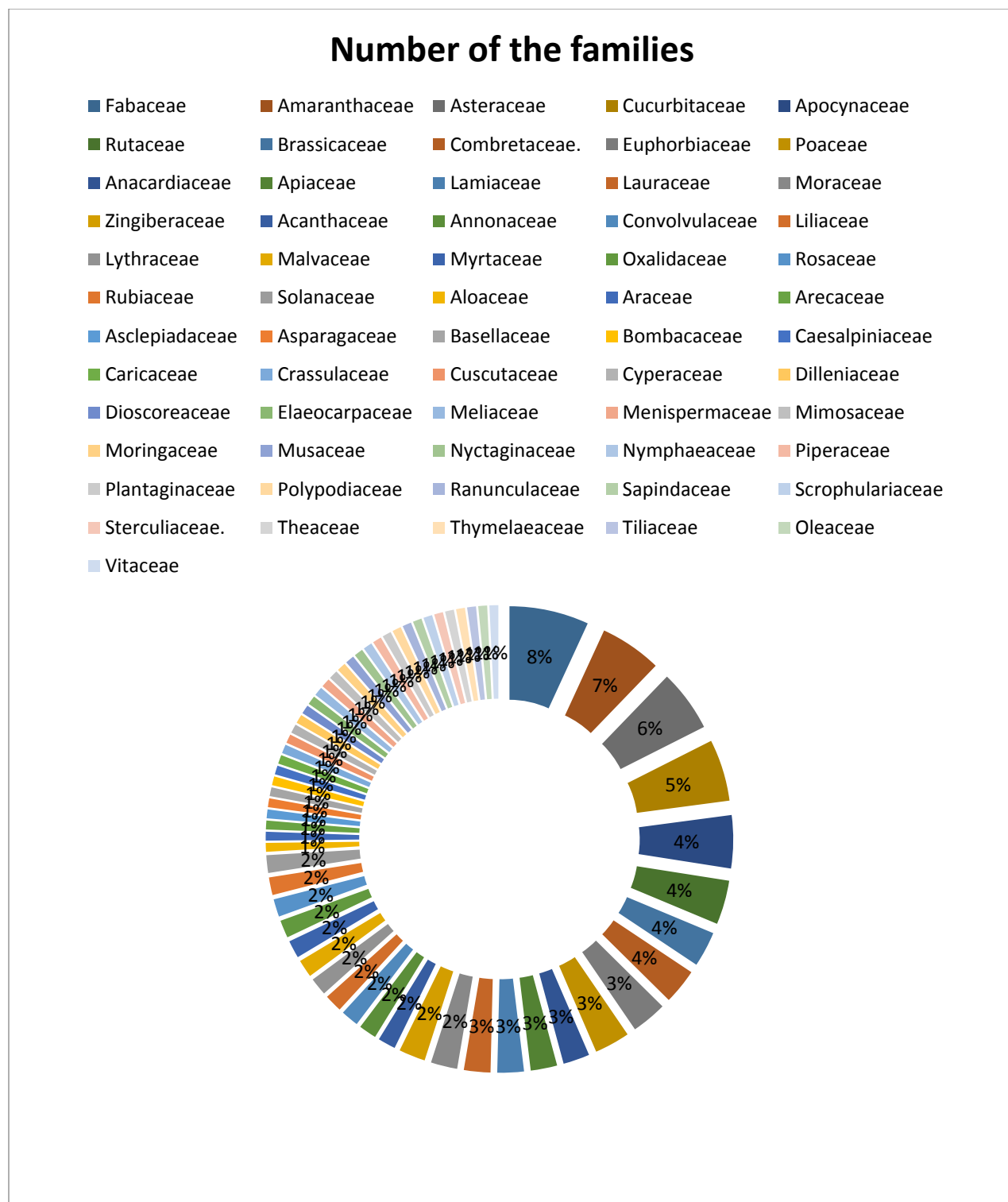


Fig.8. Ethnomedicinal plant families according to the high number of plant species for the treatment of cardiovascular diseases in Bangladesh.

Factor of informant consensus (Fic):

To calculate the Factor of informant consensus (Fic) values overall ailments have been categorized into 5 groups just as Cardiac complaints, Blood purifier, Chest pain, High blood pressure and Antioxidant. The common Fic value for all ailment categories obtained was (0.8492). Such value indicated that the maximum number of people in the study region had been well informed about the medicinal knowledge of plants. Among the five categories, the Cardiac complaints group attained the highest Fic values (0.8640) followed by Blood purifier (0.8590), Chest pain (0.8492), High blood pressure (0.7164), and Antioxidant (0.6667). (Table: 9).

Table-9: Consensus of agreement in the uses of medicinal plants among the informants.

Disease category	Ailments	Most cited plants	No. of use reports (Nur)	No. of taxa (Ntaxa)	Fic value
1	Cardiac complaints	<i>Phyllanthus emblica</i> L., <i>Allium sativum</i> L., <i>Terminalia arjuna</i> (Roxb. Ex DC.) Wight & Arn., <i>Achyranthes aspera</i> L., <i>Terminalia chebula</i> Retz, <i>Allium cepa</i> L.	582	80	0.8640
2	Blood purifier	<i>Phyllanthus emblica</i> L., <i>Terminalia chebula</i> Retz, <i>Allium cepa</i> L.	533	76	0.8590
3	Chest pain	<i>Terminalia arjuna</i> (Roxb. Ex DC.) Wight & Arn., <i>Achyranthes aspera</i> L.	127	20	0.8492
4	High blood pressure	<i>Phyllanthus emblica</i> L., <i>Allium sativum</i> L., <i>Terminalia arjuna</i> (Roxb. Ex DC.) Wight & Arn., <i>Terminalia chebula</i> Retz, <i>Allium cepa</i> L.	135	39	0.7164
5	Antioxidant	<i>Phyllanthus emblica</i> L.,	106	36	0.6667

Factor of informant consensus (Fic) was calculated by applying the following equation: $Fic = Nur - Ntaxa / Nur - 1$, Where Nur is the number of use reports in each category, Ntaxa is the number of species in each category (Trotter and Logan, 1986; Heinrich *et al.*, 1998).

Fidelity level (FI):

The medicinal plant species which have been extensively used by the people of the locality had an excessive Fidelity Level (FI) than the ones which have been less vital. For figuring out medicinally vital plant species in the study area, Fidelity Level (FI) was calculated. In general, the high (FI) of a species suggests the superiority of a particular disorder in a place and the usage of plant species by the population to deal with it (Bibi *et al.*, 2014, Srithi *et al.*, 2009). Among the 131 plant species, 45 scored FI values of 100%. The fidelity level of the most cited plant species was turned into a category (Table:10). Among the medicinal plants, some threatened species were identified, including *Achyranthes aspera* L., *Cajanus cajan* (L.) Millsp., *Andrographis paniculata* Nees., *Aquilaria malaccensis* Lam., *Dioscorea alata* L., and *Rauwolfia serpentina* (L.) Benth. ex Kurz.,

Table-10: Fidelity level (FI) values of the frequently reported plants and their major uses.

Ailments	Scientific name	Np	N	FI %
Blood purifier	<i>Adhatoda zeylanica</i> Medikus.	160	160	100
Cardiac complaints	<i>Terminalia bellirica</i> (Gaertn.) Roxb.	108	108	100
Chest pain	<i>Alternanthera sessilis</i> (L.) R.Br.	77	77	100
Cardiac complaints	<i>Baccaurea ramiflora</i> Lour.	76	76	100
Cardiac complaints	<i>Helianthus annuus</i> L.	58	58	100
Cardiac complaints	<i>Hyptis suaveolens</i> (L.) Poit.	58	58	100
Blood purifier	<i>Hemidesmus indicus</i> (L.) R. Br.	56	56	100
Cardiac complaints	<i>Nymphaea nouchali</i> Burm. F.	47	47	100
Cardiac complaints	<i>Abroma augusta</i> (L.) L. f.	44	44	100
Blood purifier	<i>Centella asiatica</i> (L.) Urban.	37	37	100
High blood pressure	<i>Kalanchoe pinnata</i> (Lamk.) Pres	35	35	100
Blood purifier	<i>Tinospora cordifolia</i> (Willd.) Hook. f. & Thoms.	32	32	100

The Fidelity level, was calculated for the foremost reported medicinal plant species as: $F1 (\%) = (N_p / N) \times 100$; wherever, N_p = number of informants that declare a use of a plant species to deal with a selected disease; N = number of informants that use the plants as a medicine to deal with any given disease.

Citation frequency (Cf %):

According to the citation frequency of all medicinal plants, the most used plants were *Phyllanthus emblica* L., *Allium sativum* L., *Terminalia arjuna* (Roxb. Ex DC.) Wight & Arn., *Achyranthes aspera* L., and *Terminalia chebula* Retz. The maximum Cf value means that such species have been very popular plant species in the study place and were used for the treatment of cardiac complaints. These species are also recognized to be important medicinal plants in our country.

Table-11: Citation frequency of most cited medicinal plants.

Scientific Name	Local Name	Parts Use	Ailments	Citation	CF value
<i>Phyllanthus emblica</i> L.	Amloki	Fruit	Antioxidant	197	65.6666667
			Blood purifier	197	65.6666667
			Cardiac complaints	197	65.6666667
			High blood pressure	197	65.6666667
			Cardiac complaints	182	60.6666667
<i>Allium sativum</i> L.	Rosun	Bulb	High blood pressure	182	60.6666667
			Cardiac complaints	174	58
<i>Terminalia arjuna</i> (Roxb. Ex DC.) Wight & Arn.	Arjun.	Bark	Cardiac complaints	174	58
			High blood pressure	174	58
			Cardiac complaints	172	57.3333333
<i>Achyranthes aspera</i> L.	Apang	Leaves	Chest pain	172	57.3333333
		Seed	Chest pain	172	57.3333333
<i>Terminalia chebula</i> Retz.	Horitaki	Fruit	Blood purifier	166	55.3333333
			Cardiac complaints	166	55.3333333
			High blood pressure	166	55.3333333
<i>Allium cepa</i> L.	Piaj	Bulb	Blood purifier	161	53.6666667
			Cardiac complaints	161	53.6666667
		Leaves	High blood pressure	161	53.6666667

<i>Adhatoda zeylanica</i> Medikus.	Basak	Leaves	Blood purifier	160	53.3333333
<i>Cajanus cajan</i> (L.) Millsp.	Orhor	Seed	Blood purifier	149	49.6666667
.			Cardiac complaints	149	49.6666667
<i>Tamarindus indica</i> L.	Tetul	Fruit	Antioxidant	136	45.3333333
			Cardiac complaints	136	45.3333333
			High blood pressure	136	45.3333333
		Leaves	Blood purifier	136	45.3333333
<i>Terminalia bellirica</i> (Gaertn.) Roxb.	Bohera	Fruit	Cardiac complaints	108	36
<i>Rauvolfia serpentina</i> (L.) Benth. ex Kurz	Sarpagandha	Leaves	High blood pressure	107	35.6666667
		Root	Cardiac complaints	107	35.6666667
<i>Citrullus lanatus</i> (Thumb.) Marts.	Tormujh	Fruit	Antioxidant	98	32.6666667
			Cardiac complaints	98	32.6666667
			High blood pressure	98	32.6666667
<i>Elaeocarpus serratus</i> L.	Jolpai	Fruit	Blood purifier	96	32
			Cardiac complaints	96	32
			High blood pressure	96	32
		Leaves	Antioxidant	96	32
<i>Abelmoschus esculentus</i> (L.) Moen	Dherosh	Fruit	Antioxidant	94	31.3333333
			Blood purifier	94	31.3333333
			Cardiac complaints	94	31.3333333
			High blood pressure	94	31.3333333
<i>Artocarpus heterophyllus</i> Lamk.	Kathal	Fruit	Blood purifier	93	31
			Cardiac complaints	93	31
			High blood pressure	93	31
		Seed	Antioxidant	93	31
<i>Cocos nucifera</i> L.	Narikel	Fruit	Antioxidant	91	30.3333333
.			Blood purifier	91	30.3333333
			Cardiac complaints	91	30.3333333
			High blood pressure	91	30.3333333
<i>Mangifera indica</i> L.	Aam	Fruit	Cardiac complaints	90	30
		Leaves	Antioxidant	90	30
			High blood pressure	90	30

Taxonomic enumeration of medicinal plants

3.1. Taxonomic enumeration of medicinal plants:

For each species scientific name, synonym, local name, short description, representative specimen, ecology, value, geographical distribution area unit provided.

Plant Name: *Abelmoschus esculentus* (L.) Moench, Meth. pl.:617 (1794) (Malvaceae)

Synonym: *Hibiscus esculentus* L. (1753), *Hibiscus longifolius* Wild. (1800)

Local Name: Dherosh.

Description: Perennial herb, cultivated in temperate climates, usually it grows around 2 meters tall. As a Malvaceae family member, it's associated with such species as cocoa, cotton and hibiscus. Leaves are 10–20 centimeters long and broad, lobate with 5–7 lobes. Flowers diameter are 4–8 centimeters, with 5 white to yellow petals, usually with a purple and red spot at the bottom of every flower petal. Capsule like fruit, height up to 18 centimeters long with a polygon cross-sectional shape, containing various seeds.

Flowering and fruiting : October-March.

Ecology: The plant is cultivated in heat temperate regions, tropical, semitropic, and around the globe.

Economic value: It's a sensible supply of dietary fiber, magnesium, vitamin K, vitamin C, folate, B1, manganese, potassium, and B6. It's made in bioactive elements, like flavonoids, particularly quercetin and phytosterols. Its seed oil is made in unsaturated fatty acids like linolic acid, which is important for people nutrition. It's useful health advantages on the polygenic disorder and a few cancers. the immature mucilage pods was found to be appropriate for industrial and meditative uses.

Geographical distribution: The plant, a native of Africa, conjointly known as *gumbo* within the U.S.A. *bamia* in Arabic countries and *bhindi* in the India, is adult in basically all heat climates. Annual plant that grows up to 2–8 feet (0.6–2.4 m).

Representative Specimen: Manikganj, Dhaka, 26-08-19; TSJ- 82 (DUSH)/94 (Cited).

Part use: Fruit

Ailments name: Antioxidant, Blood purifier, Cardiac complaints, High blood pressure.

Treatment Mode: Cooked fruit is taken as a vegetable, Young fruit is boiled with water and drink the water regularly. (Cited by Ashraful, Shawon, Khaled, Nadia, Ohona, Arman, Rakib, Mina, Ripu).

Plant Name: *Abroma augusta* (L.) L. f. Suppl.: 341 (1781). (Sterculiaceae).

Synonym: *Theobroma augusta* L. (1776), *Abroma mollis* DC. (1824).

Local Name: Ulatkambal

Description: Shrub or small tree. Leaves are alternate, simple. Dark red flowers. Fruit an obpyramidal capsule.

Flowering and fruiting: June to December

Ecology: Gardens wherever it grows well throughout the country.

Economic value: The seed of *A. augusta* yields 2 hundredths oil containing linolic acid (72%), saturated fatty acid (14%), monounsaturated fatty acid (9.4%), and octadecanoic acid (4%). The oil doesn't contain cyclopropenoid acids. Fuel extracts of stem bark, leaves and root bark of *A. augusta* have shown medicinal drug activity. An important obstacle to the use of *A. augusta* as a supply of fiber is that the plant's area unit is lined with irritating hairs, creating handling unpleasant and causing dermatitis in sensitive persons.

Geographical distribution: Bangladesh, India, Indonesia, Malaysia, Philippines, Thailand, Vietnam.

Representative Specimen: Dhaka, 14-07-19; TSJ- 76 (DUSH)/44 (Cited).

Part use: Leaves.

Ailments name: Cardiac complaints

Treatment Mode: Leaf juice is taken. (Cited by Rakib, Harun, Sajib..)

Plant Name: *Acacia nilotica* (L.) Delile ssp. Kew Bull. 12:84 (1957) (Mimosaceae)

Synonym: *Acacia arabica* (Lamk.) Wild. (1806), *Mimosa nilotica* L. (1753)

Local Name: Babla

Description: A way branched thorny woody plant or little deciduous tree. Leaves bipinnately compound. Flowers divided, bright yellow, terribly sweet-scented. Fruits pod, dark brown once dry.

Flowering and fruiting: Around the year.

Ecology: On railway track, usually grows in village or waste fallow lands.

Economic value: Extracts of *A. nilotica* pods and bark showed inhibitory effects against HIV-1 replication and also molluscicidal and antibacterial activities. It showed anthelmintic properties

and antifilarial activity. Pharmacological properties of *Acacia* species are documented the presence of tannins.

Geographical distribution: Australia, Malaysia, Thailand, Bangladesh.

Representative Specimen: Dhaka, 14-07-19; TSJ- 61 (DUSH)/28 (Cited).

Part used: Bark, Leaves.

Ailments name: High blood pressure.

Treatment Mode: Bark juice is taken, Leaf juice is taken. (Cited by Zahirul, Nipa, Sajib, Hasan...).

Plant Name: *Acalypha indica* L., Sp. Pl.: 1003 (1753) (Euphorbiaceae)

Synonym: *Cupamets indica* Rafin. (1838), *Ricinocarpus indicus* O. Kuntze (1891).

Local Name: Muktajhuri.

Description: A little herb. Leaves long petiolate. Male flowers subsessile, buds granulate. Female flowers unfold one by one.

Flowering and fruiting: December-April.

Ecology: Waste, shady places or damp, and river banks.

Economic value: The aerial parts of *A.indica* area unit are not able to contain a cyanogenic glycoside, acalyphine (0.3%) that could be a 3-cyanopyridone derivative. Moreover, the activity of flavoring medication containing *A. indica* might result in haemolysis in patients affected because of glucose-6-phosphatase dehydrogenase deficiency. Crude extracts of leaves, shoots, roots show medicinal drug and antifungal activity.

Geographical distribution: Thailand, Bangladesh, New Guinea, Borneo, Sumatra, Philippines, Vietnam.

Representative Specimen: Chattogram, 24-05-19; TSJ- 20 (DUSH)/28 (Cited).

Part used: Leaves, Root

Ailments name: Blood purifier

Treatment Mode: Leaf juice is taken. Root juice is taken, (Didar, Marjana, Nurul, Shopon..).

Plant Name: *Achyranthes aspera* L., Sp. Pl. 1:204, (1753) (Amaranthaceae)

Local Name: Apang

Description: Ascending or erect, herbs branched. Leaves simple, opposite; leafstalk present; stipules absent. Inflorescence erect, terminal or axillary spike, elongated flower, Flowers solitary,

bisexual, deflexed after anthesis, persistent, bract membranaceous, acute subtended by two bracteoles, base concave with a short wing, spinescent tepals five, apex long, pungent, stamens 5, ovule 1, ovary superior. Seed ovoid, solitary. Spermatophyte with epigeal germination.

Flowering and fruiting: Around the year.

Ecology: *Achyranthes aspera* contains weedy herbs typically found close to human houses or on roads and roadside, in wet and drier climates.

Economic value: The water-soluble organic compound achyranthine presents in roots of *A. aspera*. They conjointly contain glycosides, 0.05% oleanolic acid. The shoots area contains tritriacontanol, 17-pentatriacontanol, and 36-47 dihydroxyhenpentacontan-4-one. A series of triterpene saponins is present in the seeds, which provides oleanolic acid, galactose, sugar, glucose, and rhamnose upon hydrolysis.

Geographical distribution: Throughout the world.

Representative Specimen: Dhaka, 14-07-19; TSJ-70 (DUSH)/172 (Cited).

Part used: Seed, Leaves

Ailments name: Chest pain, Cardiac complaints

Treatment Mode: One gm of seed powder is taken, 1 ml of leaf juice is taken with cold water. (Cited by Rabbi, Shawon, Ohona, Mina, Ripu, Mukta, limon ...)

Plant Name: *Acorus calamus* L., Sp. Pl.: 324 (1753) (Araceae).

Synonym: *Acorus calamus* var. *vulnaris* L. (1753), *Acorus calamus* var. *verus* L. (1753).

Local Name: Boch

Description: Perennial herb as much as 150 cm tall. Leaves linear-ensiform, erect. The inflorescence arises from the rhizome which erect, with a cylindrical, directly or barely curved spadix up to 10 cm long. Flowers densely organized at the spadix, bisexual, 3-merous, tepals 6, in 2 whorls, free, narrowly oblong, 2-3 mm long, stamens 6 and 3 mm long, with strap-shaped filaments. Ovary superior, subquadrangular. Fruit turbinate and prismatic and 2-3-celled berry, seeded, pyramidal top, reddish, ellipsoid seed.

Flowering and fruiting : August-September.

Ecology: It's a part of aquatic habitats, eutrophic locations. It's found on pools ditches, fish ponds and marshes, and is typically cultivated land.

Economic value: Some essential oil are present, they are monoterpenes, thermolabile sesquiterpenoids and phenylpropanes. The important components consist of cis-methyl isoeugenol, geranyl acetate, β -asarone, methyl eugenol, farnesene, shyobunone, isoshyobunone, and calamusenone.

Geographical distribution: Present in China and India. Used as a medicative plant to Roman times, Egypt and Greek.

Representative Specimen: Chandpur, 20-06-19; TSJ-109 (DUSH)/28 (Cited).

Part use: Rhizome.

Ailments name: Antioxidant, Cardiac complaints

Treatment Mode: Powder is used in cooking, Soaked overnight and then water is taken in the morning. (Cited by Taherul, Sohel, Nazmul..).

Plant Name: *Adhatoda zeylanica* Medikus (1790) (Acanthaceae).

Synonym: *Justicia adhatoda* L., Sp. Pl.: 15 (1753).

Local Name: Bashak.

Description: A dense, abundant branched, evergreen woody plant. Leaves giant, elliptic, or unsubdivided. Flowers faint bluish-white in dense axillary unifoliate bracts.

Flowering and fruiting : January-April.

Ecology: Homestead and gardens.

Economic value: Its leaves can be used to make a poultice that can be applied to wounds, inflammatory swellings and rheumatic joints. Decoction of its leaves is helpful in treating scabies. Vasicine, oxyvasicine, & vasicinone are the alkaloids present in Basak and vasicine are the active ingredient for expelling sputum from the body.

Geographical distribution: Bangladesh, India, however currently abundant cultivated in Java and Thailand.

Representative Specimen: Chattogram, 24-05-19; TSJ-21 (DUSH)/160 (Cited).

Part use: Leaves

Ailments name: Blood purifier.

Treatment Mode: Leaf juice is taken. (Cited by Ashraful, Emon, Ononna, Shahin, Uzzal..).

Plant Name: *Aegle marmelos* (L.) Corr., Trans. Linn. Soc. Lond. 5: 223 (1800) (Rutaceae).

Synonym: *Crataeva marmelos* L. (1753).

Local Name: Bel.

Description: Medium sized deciduous trees, 10-15 m height, with trunks 25–50 cm in diameter. The leaves are trifoliolate and alternate; the leaf stalk is 2-4 cm long. Inflorescences are axillary racemes, 4-5 cm long fruit berry, 5–12.5 cm in diameter. The seeds are swallowed in a thick sac of adhesive mucilage.

Flowering and fruiting: April-December.

Ecology: Swampy lands in addition to dry soil.

Economic value: The edible portion of pulp is 56-77% of the fruit, protein 1.8 g, fat 0.39 g, carbohydrates 31.8 g, water 61.5 g, Ash 1.7 g, carotene 55 mg, thiamine 0.13 mg, riboflavin 1.19 mg, niacin 1.1 mg and vitamin C, 8 mg. The fruit is rich in tannin. Marmelosine (C₁₃H₁₂O₃), coumarins, limonene, alkaloids, and steroids.

Geographical distribution: India, Bangladesh, Sri Lanka, Pakistan. It spreads to Indo-China, South-East Asia.

Representative Specimen: Dhaka, 14-07-19; TSJ- 75 (DUSH)/28 (Cited).

Part use: Root

Ailments name: Cardiac complaints

Treatment Mode: 6-12 gram root powder is taken with milk. (Cited by Anisur..).

Plant Name: *Allium cepa* L., Sp. Pl. 1: 300 (1753) (Liliaceae).

Local Name: Paj.

Description: Annual herb and stem underground. Generally known as a bulb. It has radical, simple leaves. Fruit membranous, loculicidal capsule. Pedicellate flowers are present. Seeds are black.

Flowering and fruiting: February to June.

Ecology: Cultivated in fertile land.

Economic value: Sulfur-containing compounds like S-alkyl-L-cysteine sulfoxide present. It exhibited antimicrobial and antifungal activity against both gram-negative and gram-positive bacteria. Onion extracts show in vitro activity against blood platelet aggregation.

Geographical distribution: It originated from central Asia. Cultivated around the world and also present in the tropical regions of South East Asia, Papua New Guinea, Philippines, and Thailand.

Representative Specimen: Chandpur, 20-06-19; TSJ-110 (DUSH)/110 (Cited).

Part used: Bulb, Leaves.

Ailments name: Blood purifier, Cardiac complaints.

Treatment Mode: 1 ml of bulb juice is taken, Young bulb is taken directly, Leaves are taken as a vegetable. (Cited by Osman, Hizbullah, Motin, Sopnil, Abdullah...).

Plant Name: *Allium sativum* L., Sp. Pl. 1: 297 (1753) (Liliaceae)

Local Name: Roshun.

Description: Herbaceous. The stem is a small, disc-like structure that is botanically known as a bulb. It has simple, radical, and glabrous leaves. Flowers are greenish-white. Fruits have no seeds.

Flowering and fruiting : February-April.

Ecology: Moderately high land with light-weight loamy soil is preferred for its cultivation.

Economic value: Garlic valuable as a medicinal crop. It's a robust name for lowering blood glucose and cholesterol levels and inhibiting coagulum formation. It's used outwardly to cure headache, rheumatism and aching. Leaves and bulbs are anthelmintic, hypotensive, carminative, antiseptic and diaphoretic. It's based on sulphur compounds, S-alk(en)yl aminoalkanoic acid sulphoxides.

Geographical distribution: All over the world.

Representative Specimen: Manikganj, Dhaka, 26-08-19; TSJ-83 (DUSH)/182 (Cited).

Part use: Bulb

Ailments name: Cardiac complaints, High blood pressure.

Treatment Mode: 2 pieces of bulb is taken everyday, Paste is taken internally with boiled rice. (Cited by Redwan, Rashedul, Ashraful, Mahbub, Mukta..).

Plant Name: *Aloe vera* (L.) Burm. F., Fl. Ind.: 83 (1768) (Aloaceae)

Synonym: *Aloe barbadensis* Miller (1768).

Local Name: Alovera, Ghrito-kumari.

Description: A xerophytic perennial herb, succulent, stem short, thick, triangular, or spear-like. Leaves sessile, crowded, numerous, side grey to pale with few spots, lower surface usually lighter, spiny at the margins. Flowers pedicelled, actinomorphic, hypogynous. Cover orange or red, tubular, section somewhat curving. Fruit capsule, elongated.

Flowering and fruiting: September-December

Ecology: Dry areas.

Economic value: The leaf juice is applied to treat pimples, cuts, or blackheads. The sap contains different components works against respiratory disease and treats coughs. The recent leaf juice is taken into account anthelmintic, depurative, purgative, and an emmenagogue.

Geographical distribution: Distributed around the tropics and subtropics.

Representative Specimen: Dhaka, 14-07-19; TSJ- 79 (DUSH)/28 (Cited).

Part use: Latex

Ailments name: Blood purifier, Cardiac complaints, High blood pressure.

Treatment Mode: Latex juice is taken, Latex paste is eaten with honey, Latex is taken as vegetable, Latex pieces is taken. (Cited by Sifat, Tabassum, Sadia, Mizanur, Tania..)

Plant Name: *Alstonia scholaris* L. R. Br., Mem. Wern.Nat.Hist. Soc. 1: 76 (1811) (Apocynaceae).

Synonym: *Echites scholars* L. (1767).

Local Name: Chatim

Description: Tall tree, leaves in the whorl, plate hairless, oblong-lanceolate, shining on top of, pale to a lower place, varied lateral veins, nervure outstanding margin entire, inflorescence umbellate cymes, branched, several floral, flower dark-green white, gyre persistent, coil tube cylindrical, follicles pendulous.

Flowering and fruiting : November-May

Ecology: Roadsides, homestead gardens, typically happens in deciduous, evergreen, or mixed forests.

Economic value: *A. scholaris* is that the most vital supply of timber. Wood yields quality pulp. In Java, the wood was used for blackboards. The bark contains several alkaloids. Bark decoction is used as ferbrifuge and tonic. The latex is applied to rheumatic pains and ulcers. The bark is used as an antidysenteric, astringent, colds and respiratory illness.

Geographical distribution: *A. scholaris* is widely distributed *Alstonia* species, ranging from Sri Lanka, India, Southeast Asia and Southern China, Malaysia, and the Solomon Islands.

Representative Specimen: Chattogram, 24-05-19; TSJ-9 (DUSH)/28 (Cited).

Part use: Bark

Ailments name: High blood pressure.

Treatment Mode: 50 gm bark powder is taken with hot water twice in a day. (Cited by Sohel).

Plant Name: *Alternanthera sessilis* (L.) R.Br. ex D C., Cat. Pl. Horti Monsp.77 (1813).

(Amaranthaceae).

Synonym: *Gomphrena sessilis* L. (1753), *Illecebrum* Lamk. (1762), *Alternanthera triandra* Lamk. (1783), *Alternanthera denticulata* R. Br. (1810), *Achyranthes villosa* Blanco (1837).

Local Name: Chanchi, Highcha, Sacgi- shak, Kathapata shak,

Description: It is usually a much branched, decumbent or prostrate herb, 10–35 cm in length, rooting at the nodes, with the stem subglabrous. Leaf is simple, opposite, linear, oblong, elliptic, or oval, with an attenuate base, a short petiole, an obtuse or subacute tip, and an entire margin. The inflorescence is a head, axillary, frequently clustered, white, and hardly glistening. Flowers hermaphrodites. Bracts and bracteoles are herbaceous, glabrous, thin, and nearly equal. Sepaline, glabrous, rigid, and unequal perianth segments; equal, ovate, attenuate, and glabrous tepals. Stamens 2-3, filaments with a short cup, anthers ovoid, pseudo staminodes filiform. Ovary obovoid-compressed, style short, stigma capitate to short-lobed. Utricle of fruit, compressed and emarginated. Seeds are orbicular or lenticular, pale orange-brown, and faintly reticulate.

Flowering and fruiting: Almost Around the year.

Ecology: Tea plantations, and ditches to dry roadsides banks, gardens, or different disturbed grounds and low lands.

Economic value: The plant is used as lactagogue, febrifuge, and intestinal cramps and cooling hair wash (Kirtikar *et al.*, 1935). Shoots are used as a vegetable in several parts of the country.

Geographical distribution: The tropics and sub-tropics. In Bangladesh, it grows all parts of the country.

Representative Specimen: Manikganj, Dhaka, 26-08-19; TSJ- 84 (DUSH)/77 (Cited).

Part use: Whole plant

Ailments name: Chest pain.

Treatment Mode: Cooked whole plant is taken as vegetable. (Cited by Foyosal).

Plant Name: *Amaranthus gangeticus* L. (1759) (Amaranthaceae)

Synonym: *Amaranthus tricolor* L., Sp. Pl. 1: 989 (1753), *Amaranthus tristis* L. (1753), *Amaranthus polyganus* L. (1755).

Local Name: Lalsak.

Description: Erect herb or an annual ascending with a stout stem that is usually heavily branched, with branches that are glabrous, angular, or furnished in the upper part. Leaves are glabrous, green or purplish, different in size. Flowers increasingly pseudo-spikes or panicles. Fruits are circumscissile below the middle, ovoid. Seeds are ovoid, lenticular.

Flowering and fruiting: Around the year

Ecology: Dry location, gardens.

Economic value: Leaves have essential micro-nutrients. They're a superb supply of β -carotene, vitamin C, Fe, and Ca. They are wealthy in fiber and pteroylglutamic acid and their supermolecule content include essential amino acids and different sulfur-containing amino acids. Vegetable amaranths are decent food with medicinal properties for lactating mothers, children, fever, hemorrhage, kidney complaints, anemia, depurative, and genital illness.

Geographical distribution: Widely distributed.

Representative Specimen: Manikganj, Dhaka, 26-08-19; TSJ-85 (DUSH)/44 (Cited).

Part use: Whole plant

Ailments name: Antioxidant, Blood purifier, Cardiac complaints, High blood pressure.

Treatment Mode: Cooked whole plant is taken as a vegetable. (Cited by Rahat, Sabbir, Mehedi, Sohan, Kamal..)

Plant Name: *Amaranthus spinosus* L., Sp. Pl. 1: 991 (1753) (Amaranthaceae).

Local Name: Katanote.

Description: Annual, erect, herb. Leaves ovate, rectangular or elliptic, long petioled. Flowers tiny. Fruit is utriculus, rugose. Seeds are lentiform, compressed, black, shining, minutely reticulate.

Flowering and fruiting: Around the year.

Ecology: Wastelands, roadsides, fields, and gardens.

Economic value: Roots present α -spinasterol, saponins. Sterols, n-alkanes, fatty acids, and free alcohols have been found within the rock oil ether extract of the herb. The flavonoid rutin has been found in the surface of setaceous Amaranth and traces of prussic acid within the leaves. There's a presence of K and a few diuretic drug properties. The leaves are used for the treatment of haemorrhagia, inflammations.

Geographical distribution: *A. spinosus* grows all tropical and subtropic regions.

Representative Specimen: Manikganj, Dhaka, 26-08-19; TSJ-86 (DUSH)/28 (Cited).

Part use: Whole plant

Ailments name: Blood purifier

Treatment Mode: Cooked whole plant is taken as vegetable. (Cited by Sujon, Shuvo, Faruk, Sohel, Mamun..).

Plant Name: *Amaranthus viridis* L., Sp. Pl. ed.2: 1405. (1763) (Amaranthaceae)

Synonym: *Amaranthus gracilis* Desf., Bot.: 43. (1804), *Amaranthus polystachyus* Wild., Sp.Pl. 4:385.1805

Local Name: Noteshak

Description: Annual herb. Green to reddish stems. Leaves are alternate, simple, ovate to rhombic, and glabrous on the surface. The inflorescence is composed of compact cymose clusters in the lower axils, spike-like panicles in the upper axils, and spike-like panicles at the plant apex. Flower is green, minute, unisexual, and monoecious. Utricle, subglobose, rugose fruit. Seed is dark brown to black, shiny.

Flowering and fruiting: Around the year.

Ecology: *Amaranthus viridis* are short-day plants, which is beneficial in the subtropics.

Economic value: *Amaranthus viridis* are used as food. Vegetable amaranths are taken as good food with medicinal properties for lactating mothers, fever, hemorrhage, anemia, young children, or kidney complaints.

Geographical distribution: These cultivated varieties, many wild species are sometimes collected as herbs, present in South America, India, and Nepal.

Representative Specimen: Manikganj, Dhaka, 26-08-19; TSJ- 87 (DUSH)/17 (Cited).

Part used: Whole plant.

Ailments name: Blood purifier.

Treatment Mode: Cooked whole plant is taken as a vegetable. (Cited by Helal, Ashik, Rakibul..).

Plant Name: *Anacardium occidentale* L., Sp. Pl. 1:383 (1753) (Anacardiaceae).

Local Name: Kajubadam, Hijlibadam.

Description: A small to medium-sized, globrous, evergreen tree. Bark thick grey, rough and cracked. Leaves ovate, 12-18 cm long, globrous, very thickly coriaceous, base round or blunt, ovate, margin entire. Flowers polygamous, pedicellate, fragrant, fruit kidney-shaped.

Flowering and fruiting: February – June.

Ecology: Forest and hilly regions, also cultivated land.

Economic value: The seed consists of 21% protein and 35–45% oil. The oil consists of 60–74% oleic acid and 20–8% linoleic acid, 90% anacardic acid. The juice of the cashew apple is rich in riboflavin, ascorbic acid, and calcium.

Geographical distribution: It is cultivated in many tropical countries. The main producers are Brazil, South, America, Sri Lanka, Malaysia, Indonesia, India, Mozambique, and Tanzania.

Representative Specimen: Chandpur, 20-06-19; TSJ-111 (DUSH)/28 (Cited).

Part use: Seed

Ailments name: Cardiac complaints

Treatment Mode: Fried seed is taken. (Cited by Nazmul, Monjurul, Sifat, Foysal, Israt..).

Plant Name: *Andrographis paniculata* (Burm. f.) Wall. Ex Nees in Wall., Pl. As. Rar. 3: 116 (1832) (Acanthaceae).

Synonym: *Justicia paniculata* Burm. f. (1768).

Local Name: Kalomegh.

Description: Annual herb with quadrangular and glabrous stems. Leaves are petiolate, lanceolate, entire, acuminate, glabrous, only the midrib and veins slightly pubescent, dark green. Flowers panicles, sepals, linear and lanceolate, with equal segments. White or pale with deep pink or deep purplish-violet markings inside at the base of the lower lip. Fruit is a capsule, slightly glandular and hairy when young. Subquadrate, glabrous, and yellowish-brown seeds.

Flowering and fruiting: November-May.

Ecology: Garden, wastelands, and homesteads.

Economic value: The roots and leaves of *A. paniculata* have used as traditional medicine. It is effective remedy against snake bites. Crushed leaves has been used for fevers, tonic, and itchy skin eruptions. Leaves and barks are used for stomach aches, cholera, dysentery, typhus, influenza, and bronchitis. Pills or infusions are also recommended to treat hypertension, jaundice, rheumatism, and gonorrhoea.

Geographical distribution: *A. paniculata* is native to India, Indo-China, Indonesia, Philippines, Thailand, Malaysia, China, and Australia.

Representative Specimen: Chattogram, 24-05-19; TSJ-19 (DUSH)/15 (Cited).

Part use: Leaves

Ailments name: Antioxidant, Blood purifier.

Treatment Mode: Leaf juice is taken with honey. (Cited by Azad, Mahmud, Nasir, Sarif..).

Plant Name: *Aquilaria malaccensis* Lamk., Encycl. 1(1): 49. (1783) (Thymelaeaceae)

Synonym: *Aquilaria agallocha* Roxb.Fl. Ind. 2:422. 1820.

Local Name: Agor

Description: It grows up to 6–20 m tall. Leaves are alternate, 2–4 cm broad, 5–11 cm long with a short apex. Fruit is 2.5–3 cm long. Flowers are yellowish-green and produced umbels.

Flowering and fruiting: February- December

Ecology: It is an evergreen tropical forest tree. It is extensively cultivated in homegardens because of its highly priced resin, or agarwood.

Economic value: *Aquilaria malaccensis* is the major source of agarwood, It is used for perfume. Agarwood has bitter taste. A root extract was used for stomach complaints, dysentery, pains in the lungs and liver. The plant has been reported for the treatment of antinociceptive, sedative, antihyperglycaemic, thrombolytic, antidiabetic, ulcer protective, antimicrobial, laxative, anti-oxidant, anticancerous, antidiarrhoeal, and hepatoprotective activities.

Geographical distribution: *Aquilaria malaccensis*, found in Laos, India. Thailand, Malaysia, and Indonesia.

Representative Specimen: Chandpur, 20-06-19; TSJ-112 (DUSH)/28 (Cited).

Part use: Bark

Ailments name: Cardiac complaints

Treatment Mode: 2/3 gram bark powder is taken with milk twice in a day. (Cited by Dipok, Fahad, Shishir, Riya..).

Plant Name: *Arachis hypogaea* L., Sp. Pl. 2: 741 (1753) (Fabaceae).

Local Name: China badam

Description: Erect, trailing, prostrate, annual herb, root nodules. Stem branched, dimorphic, leaflets. Flowers are compressed spike, foliage leaves. Fruit pod like, reticulate. Seeds obovoid.

Flowering and fruiting: March-December.

Ecology: Cultivated land.

Economic value: Crop is used for making oil. The press cake used to produce groundnut flour. Groundnuts contain four components just like water, protein, carbohydrates, fibre, fat, and ash.

Geographical distribution: All over the world.

Representative Specimen: Chattogram, 24-05-19; TSJ- 24 (DUSH)/42 (Cited).

Part use: Seed

Ailments name: Antioxidant, Blood purifier, Cardiac complaints, High blood pressure.

Treatment Mode: Fried seed is taken, 5/10 seed soaked in water overnight and take the water with seed, Seed juice is taken, Seed paste is taken with boiled rice. (Cited by Sifat, Ruja, Meghna, Shamim..).

Plant Name: *Artabotrys hexapetalus* (L.f.) Bhandari, Baileya 12: 149. (1965). (Annonaceae).

Synonym: *Annona hexapetala* L.f., Sp. Pl.1: 270. (1781).

Local Name: Kathalichapa

Description: Climber shrub up to 8 m tall, young twigs, hairy, and thorny branches. Petiole with acute, short-acuminate leaves. Sepals ovate-triangular, obovoid, mucronate, solitary, monocarp, or in pairs on a straight peduncle.

Flowering and fruiting: April-July/September-February.

Ecology: *A. hexapetalus* is usually cultivated in gardens.

Economic value: Boiled leaves are used against cholera. Flowers are used to prepare tea.

Geographical distribution: Throughout the world

Representative Specimen: Chandpur, 20-06-19; TSJ-113 (DUSH)/28 (Cited).

Part use: Flower

Ailments name: Blood purifier.

Treatment Mode: Flower powder is taken in empty stomach with water twice in a day. (Cited by Tania, Dewan, Robiul, Rawnok..).

Plant Name: *Artocarpus heterophyllus* Lamk., Encycl. Meth. 3: 210 (1789) (Moraceae).

Synonym: *Artocarpus maxima* Blanco (1837).

Local Name: Kanthal.

Description: A medium-sized to massive semi-evergreen tree. The plant exudes white gummy latex when injured. The leaves are simple, alternate, and petiolate, and the stipules are massive, deciduous, and leatherlike. Fruits are barrel- or pear-shaped, with short warts around the edges and a central receptacle on the side.

Flowering and fruiting : February – July.

Ecology: Well-drained highland, gardens.

Economic value: Kathal is rich in vitamin C. Moreover, it's one of the rare fruits that's wealthy in the B-complex cluster of vitamins and contains excellent amounts of B-complex vitamins (pyridoxine), niacin, riboflavin, and vitamin B. Kathal contains amino acids like essential amino acids, cystine, histidine, leucine, lysine, methionine, threonine, and essential amino acids. Ripe kathal contains minerals such as metal, metal and vitamins, as well as organic acids. It's an upscale supply of many high-worth compounds with potential useful physiological activities. It's acknowledged for its bactericide, antifungal, medicine, medication, and inhibitor activities.

Geographical distribution: Kathal is considered to have originated in the rain forests of the Western Ghats in the Southwestern part of India and Bangladesh. It is found in many parts of Asia, Africa, and South America. It grows in warm and moist regions.

Representative Specimen: Manikganj, Dhaka, 26-08-19; TSJ-88 (DUSH)/93 (Cited).

Part used: Seed, Fruit.

Ailments name: Antioxidant, Cardiac complaints, High blood pressure, Blood purifier.

Treatment Mode: Seed paste is taken with boiled rice, Young fruit is taken as a vegetable, Ripe Fruit is taken. (Cited by Al-amin, Hamim, Motin, Arman, Arafat, Maruf..).

Plant Name: *Asclepias curassavica* L., Sp. Pl. 1: 215. (1753) (Asclepiadaceae)

Local Name: Bon-karpash

Description: An annual to perennial herb, usually unbranched but sometimes with several branches, woody at the base, white. Leaves are narrowly lanceolate young stems hairy, latex copious and opposite. The base and apex are acute, and the lateral veins are visible. Seeds are

numerous, broadly oval, flattened with a narrow wing, 5 mm long, with an apical tuft of silky hairs (coma), 2-3 cm long, and white. Seedling with epigeal germination.

Flowering and fruiting : Around the year.

Ecology: *A. curassavica* grows in sunny or slightly shaded habitats from low-lying up to 2400 m altitude, and naturalized in sedgelike and sandy areas, waste places, coconut plantations and, usually in patches.

Economic value: Cardiac glycosides contains in *A. curassavica* at least 50%. Asclepiadin, is extremely poisonous, causing paralysis of heart muscles and death. It decomposes fast into an inert component and a sugar. Its pharmacological effects after application include salivation, diarrhoea, paralysis, cramps, nausea, vomiting, and death if the paralysis extends to the heart.

Geographical distribution: Throughout the tropics and semitropics. In some locations it's currently naturalized and has become a weed.

Representative Specimen: Manikganj, Dhaka, 26-08-19; TSJ- 89 (DUSH)/27 (Cited).

Part use: Leaves

Ailments name: Chest pain

Treatment Mode: Leaf juice is taken with honey twice in a day in empty stomach. (Cited by Riya, Saifur, Murad, Habibur..).

Plant Name: *Asparagus racemosus* Willd. , Sp. Pl.2: 152 (1799) (Liliaceae).

Local Name: Shatamuli.

Description: A perennial climber, slender bush with crooked spines, root stem, leaves minute, scale-like, inflorescence racemes, flowers bisexual, bracteate, penicillate, white, sweet-scented, covering segments half dozen, anthers minute, purple, filaments free, fruit ball-shaped berry.

Flowering and fruiting : November- March

Ecology: *A. racemosus* may be a drought-tolerant plant, sure to seasonal climates.

Economic value: Roots are eaten. A similar conserve is used medically against impotence and as a stimulant, demulcent, water pill, restorative and anti-dysenteric. It is used to stimulate milk flow in cows. *A. racemosus* is typically grown as a decorative plant.

Geographical distribution: Widespread in Africa and thru southern Asia into China, Indo-China, and Malesia to northern Australia. In Malesia, it occurs in Peninsular Malaysia and Indonesia.

Representative Specimen: Manikganj, Dhaka, 26-08-19; TSJ-90 (DUSH)/27 (Cited).

Part use: Leaves

Ailments name: Antioxidant, Chest pain.

Treatment Mode: 5/7 gram boiled leaf is taken, 2/3 ml root juice is taken with a half cup of raw milk and drink it on empty stomach. (Cited by Mahbub, Rashedul, Gias, Khaled..).

Plant Name: *Averrhoa bilimbi* L., Sp. Pl. 1:428. (1753). (Oxalidaceae).

Local Name: Bilombo

Description: Tree sparsely branched, branches stiff, dense and erect. Leaves 7-19 jugates. Flowers usually in cauliflorous, heterostylate panicles petals free, 10-20 mm long, short fertile stamens, purplish red, Seeds without aril, Fruit slightly lobed, up to 10 cm × 5 cm.

Flowering and fruiting : Around the year.

Ecology: This species prefer a climate with a dry season. Drought, flooding, and salinity aren't tolerated.

Economic value: The bitter taste of *Averrhoa bilimbi* is determined by acid; acid dominates in *carambola*, even within the sweet varieties. Each fruit is high in vitamin K and vitamin A; however, *Averrhoa bilimbi* has a low vitamin C content while *carambola* has a high vitamin C content. Quantitative information for the composition of *carambola* per a hundred gram edible portion: water, protein, sugars, fiber. *Carambola* fruit contains 60–75% juice, which is acidic or sweet.

Geographical distribution: Everywhere in the humid tropics and the Sub-tropics.

Representative Specimen: Chattogram, 24-05-19; TSJ-16 (DUSH)/ 27 (Cited).

Part used: Leaves, Fruit

Ailments name: Antioxidant, High blood pressure.

Treatment Mode: Leaf paste is taken in empty stomach, Fruit is taken with salt. (Cited by Biplob, Mahin, Masuda, Mojahid, Emran..).

Plant Name: *Averrhoa carambola* L., Sp. Pl. 1: 428 (1753) (Oxalidaceae).

Local Name: Kamranga

Description: A medium sized tree sometimes with drooping branches. Leaves petiolate, alternately compound. Flowers sometimes within the axillary panicles, pedicellate, bright red. Fruits ovoid to ellipsoid. Seeds ovoid to elliptic, arillate.

Flowering and fruiting : September to March.

Ecology: Plainland and well-drained soil.

Economic value: The edible portion of *carambola* is 100 g, water 90 g, 3.5-11 gm, fiber 0.7 g, protein 0.75 g, sugars. Fruit contains 60-75% juice, which can be quite acid or sweet. The fruit of carambola is used recently, in salads, juice, preserves, jam, punch bowls and jelly.

Geographical distribution: All over the tropics and subtropics regions are suitable for the growth of Carambola.

Representative Specimen: Dhaka, 14-07-19; TSJ-52 (DUSH)/40 (Cited).

Part use: Fruit

Ailments name: Cardiac complaints, High blood pressure.

Treatment Mode: Fruit is preserved as pickles, Ripe Fruit is taken, Fruit juice is taken. (Cited by Nayem, Alomgir, Mumtahn, Razib, Sawon..).

Plant Name: *Azadirachta indica* A. Juss., Mem. Mus. Hist. Nat. Pairs 19: 221, t. 13 (1832) (Meliaceae).

Synonym: *Melia azadirachta* L. (1832).

Local Name: Neem.

Description: A medium-sized to massive evergreen to semi-deciduous tree, bark sleek, fissured and flaking on previous woods, pinkish-brown or gray, inner bark orange-red, with sticky noisome sap. Leaves alternate, reddish, leaflets alternate below and opposite to subopposite. Fruit a drop, ellipsoid, green, turning yellow once ripe. Seeds ovoid, with a skinny membranous seed coat.

Flowering and fruiting: March-July

Ecology: Cultivated in homesteads, open places, thickets, and grassland.

Economic value: Seed contains 20–50% oil. The oil contains biologically active limonoids and tetrahydrotriterpenoid compounds. Limonoids are the most important. Meliacarpin, nimbin, azadirachtin, nimbolinin, and salannin are present. Seed oil is used in soap making. Various parts have diuretic, antiperiodic, anthelmintic, antiseptic, and purgative actions and are also used to treat boils, pimples, eye diseases, rheumatism, hepatitis, leprosy, scrofula, ringworm, and ulcers.

Geographical distribution: Originated within the Myanmar and distributed throughout the India. Cultivated in Malaysia, and Thailand, where it's naturalized and modified deciduous forests. It's

recently been introduced into tropical South and Central America, northern Australia, Florida, Hawaii, Saudi Arabia, and Philippines. Currently, it's the fastest-spreading trees and pan-tropical.

Representative Specimen: Dhaka, 14-07-19; TSJ-62 (DUSH)/15 (Cited).

Part use: Leaves

Ailments name: Blood purifier, High blood pressure.

Treatment Mode: Young leaf juice is taken, Leaf juice drink with honey. (Cited by Sajib, Mahbub, Boishakhi, Atik..).

Plant Name: *Baccaurea ramiflora* Lour. Fl. Cochinch: 661 (1790) (Euphorbiaceae).

Synonym: *Baccaurea sapida* (Roxb.) Muell. Arg. (1866).

Local Name: Lotkan

Description: A medium-sized tree, shoots are young, bushy, bark grey, leaves alternate, membranous, ovate, margin entire, shortly acuminate, plant structure unsubdivided, male racemes subsessile, solitary, sepals 4, stamens 4-8, anthers tiny, pistil 3-lobed, female flowers yellow, sepals yellow tomentose, stigma simple, fimbriate, fruit spherical yellow, seeds convex with white plant part and red seed coat.

Flowering and fruiting: June –September

Ecology: Cultivated in garden and homesteads.

Economic value: The timber is used to create homes and boats and to form furnishings. The common weight of this fruit consists of fleshy rind, pulp, and seeds. Analysis of the edible pulp contains water, protein, saccharose, fiber, ash.

Geographical distribution: From the eastern Himalayas to Indo-China, Southern China, Thailand and Malaysia.

Representative Specimen: Chattogram, 24-05-19; TSJ-1 (DUSH)/76 (Cited).

Part use: Fruit

Ailments name: Cardiac complaints

Treatment Mode: Fruit juice is taken. (Cited by Sampa, Piash, Arif, Pranto, Nurul..).

Plant Name: *Bacopa monnieri* (L.) Pennel. Proc. Acad. Nat. Sci. Philadelphia 98:94 (1946). (Scrophulariaceae)

Synonym: *Lycimachia monnieri* L. (1756).

Local Name: Brahmi shak

Description: A far branched, locomotion herb, glabrous, branched and fleshy. Leaves are elliptical, ovate, spatulate, opposite, stipules absent, stalk absent, Flowers slightly irregular, axillary, linear, solitary, curlicue 4-5-part, ovate, the others unsubdivided, apex acuminate. Fruit an ovoid capsule, valves 2-4, seeds varied. Seed ribbed, ovoid, brown. Spermatophyte with epigeal germination, elliptical, cotyledons tiny, glabrous.

Flowering and fruiting: Around the year.

Ecology: *B. monnieri* grows in wet & salt localities, rice fields, brackish water, sandy soils along rivers or from sea-level up to 300 m altitude.

Economic value: Aerial parts contain the alkaloid herpestine, saponins monnierin, hersaponin and bacosides. Other components are the heptacosane, octacosane, betulinic acid, triterpene bacosine, nonacosane, D-mannitol, triacontane, hentriacontane, dotriacontane and luteolin. Whole plant is used nerve tonic, insanity, epilepsy, hysteria, and cardiac tonic. Powdered dried leaves are used nervous breakdown, and similar conditions.

Geographical distribution: Around the tropics and sub-tropics.

Representative Specimen: Chattogram, 24-05-19; TSJ-8 (DUSH)/26 (Cited).

Part use: Leaves

Ailments name: Antioxidant, High blood pressure.

Treatment Mode: Cooked leaf is taken as a vegetable. (Cited by Atik, Uzzal, Khaled, Rabbi..).

Plant Name: *Basella alba* L. (1753) (Basellaceae)

Synonym: *Basella rubra* L. (1753).

Local Name: Puishak

Description: A densely branched, fleshy twiner with a green or colored stem that twines to the right. Leaves are fleshy, simple, petiolate, alternate, exstipule, cordate to ovate. Flowers are bisexual, sessile, regular, white, red, or greenish, and often violated. Fruits are berry-like with fleshy persistent lobes, black, red or purplish juice. Seeds are more or less globose or oblong.

Flowering and fruiting: November - March.

Ecology: Cultivated garden.

Economic value: Shoots contain water, protein, fat, carbohydrates, and fibre. The low amount of protein, vitamin and mineral contents widely. It is commonly grown for its young shoots as

mucilaginous vegetable. It is consumed green salad, boiled or fried. It has gastro-protective activity, ulcer healing, wound healing activity and anti-inflammatory activity. It is reported to improve testosterone levels in males, thus boosting libido.

Geographical distribution: It is native to India, South-east Asia, China, Africa, and America. It is particularly popular in Malaysia and Philippines.

Representative Specimen: Manikganj, Dhaka, 26-08-19; TSJ-100 (DUSH)/38 (Cited).

Part use: Leaves

Ailments name: Antioxidant, Cardiac complaints, High blood pressure.

Treatment Mode: Cooked leaf is taken as a vegetable, Leaf juice is taken, Boiled leaf is taken. (Cited by Taherul, Biplob, Sourov, Masuda, Samira, Mojahid ...).

Plant Name: *Benincasa hispida* (Thunberg ex Murray) Cogniaux Prologue: In: A. DC, Monogr. phan. 3: 513 (1881) (Cucurbitaceae).

Synonym: *Cucurbita hispida* Thunberg ex Murray (1784), *Benincasa cerifera* Savi (1818).

Local Name: Chal kumra

Description: Robust, annual, usually monoecious, hispid, climber's herb. The stem is thick, terete, and furrowed longitudinally. Simple and distichous leaves. Flowers are solitary in leaf axils. Fruit is large, berry like, oblong, ellipsoid, ovoid, or globose. Seeds are numerous, flat, ovate-elliptic.

Flowering and fruiting: June-September.

Ecology: Dry areas of the lowland tropics and drought tolerant. In Southeast Asia from sea level up to 1000 m altitude. Seed germination needed high soil temperatures.

Economic value: It contains water, protein, fat, carbohydrates, traces of vitamin A, vitamin B₁, B₂, niacin, vitamin C, Ca, Fe, Mg, and P. Young shoots, flowers, and leaves are used as vegetables. The seeds are consumed after frying as a snack food. They are considered vermifugal as well. The fruits are valued for diuretic, laxative and tonic.

Geographical distribution: Widely cultivated throughout tropical Asia, semitropic, and heat temperate parts around the world.

Representative Specimen: Chandpur, 20-06-19; TSJ: 114 (DUSH)/26 (Cited).

Part use: Leaves

Ailments name: Blood purifier

Treatment Mode: Cooked fruit is taken as a vegetable. (Cited by Tony, Hanif, Emon, Sabbir..).

Plant Name: *Blumea lacera* (Burm. F.) DC. In weight. Contrib. Bot. Ind.: 14 (1834) (Asteraceae).

Synonym: *Conyza lacera* Burm. f. (1768).

Local Name: Kukursungha, Shealmoti.

Description: An annual herb. Leaves ovate-oblong, toothed. Yellow flowers on terminal capitula. Cypsela is linear to rectangular.

Flowering and fruiting: November – July.

Ecology: Roadside and open fields.

Economic value: Flowers decoction of *B. lacera* is taken to treat bronchitis. Leaf juice is useful for hemorrhages and anthelmintic. It is also used as deobstruent, diuretic, astringent, febrifuge, catarrhal afflictions and wound healing properties. It contains a strong, camphor-like oil.

Geographical distribution: Africa, Pakistan, India, Myanmar, Indo-China, China, the Ryukyu Islands, Taiwan, Bangladesh, Sri Lanka, Thailand, throughout the Malesian region towards the Marianas. New Caledonia, and Australia.

Representative Specimen: Chattogram, 24-05-19; TSJ- 22 (DUSH)/25 (Cited).

Part use: Leaves

Ailments name: Antioxidant.

Treatment Mode: Cooked leaf is taken as a vegetable. (Rahman Jafor, Shipon..).

Plant Name: *Boerhaavia diffusa* L., Sp. Pl. 1:3 (1753). (Nyctaginaceae)

Synonym: *Boerhaavia repens* L. (1753)

Local Name: Punornova

Description: A perennial herb, erect, rising, creeping, puberulous to bald, with sessile or pedunculate, club-shaped, stems generally red and enlarged at the hubs. Leaves direct, inverse,, pale unpracticed to a lower place, layer with unpredictable models or red organs; stem present; stipules missing. The inflorescence is a 2–10-bloomed inflorescence. Anthocarpous fruit with a pinnacle closure. Seedling with epigeal germination, puberulous, purple beneath, midvein distinct, hypocotyl, leaves substituted, cotyledons rounded and purple to a lower place.

Flowering and fruiting: January-April.

Ecology: *Boerhavia* occurred in beaches, heliophilous, ruderal localities, grows sea level up to 1000 m altitude. They are weeds in cultivated land.

Economic value: Roots of Indian *B. diffusa* contains punarnavine, ursolic acid, hentriacontane, triacontanol and sitosterol. Roots contain the rotenoid boeravinones, A1, B1, C2, D, F, dihydroisofurenoxanthin and boerhavine compound. In addition, *B. diffusa* is used for hepatoprotective, febrifuge, cardiogenic, expectorant, emetic, laxative, diuretic, anthelmintic, purgative, strangury, gonorrhoea, jaundice, enlarged spleen, asthma.

Geographical distribution: All warmth or tropical countries.

Representative Specimen: Dhaka, 14-07-19; TSJ-74 (DUSH).

Part use: Leaves

Ailments name: Cardiac complaints

Treatment Mode: 5-10 ml leaf juice is taken twice in a day. (Cited by Bappi, Khokon, Faruk ..).

Plant Name: *Bombax ceiba* L., Sp. Pl.: 511 (1753) (Bombacaceae).

Synonym: *Bombax heterophyllum* L. (1767).

Local Name: Shimultula.

Description: The large-sized with whitish bark, compound leaves, long petioled petioles. Flowers are solitary on the defoliated branchlets, with complete petals of orange, red, or yellow. Fruit is capsule like and dehiscent.

Flowering and fruiting: January-April.

Ecology: Forest and village thickets, principally cultivated.

Economic value: The flowers are astringent. The young roots are diuretic and tonic. They are used in the treatment of tubercular fistula, coughs, urinary complaints, cholera, nocturnal pollution, abdominal pain due to dysentery, and impotency. The gum is demulcent, astringent, and tonic. It is used in dysentery, haemoptysis, influenza, and menorrhagia.

Geographical distribution: Tree is widely planted in Myanmar, Vietnam, Malaysia, Thailand, Indonesia, southern China and Taiwan, etc.

Representative Specimen: Chandpur, 20-06-2019; TSJ-115 (DUSH)/24 (Cited).

Part use: Root

Ailments name: Blood purifier.

Treatment Mode: 1/2 gram root powder is taken with goat milk twice a day. (Cited by Ayra, Rashed, Jaber, Tanzia, Zahidul...).

Plant Name: *Brassica capitata* L., Sp. Pl. 2:667 (1753) (Brassicaceae)

Local Name: Badhakopi.

Description: Annual or biennial herb with strong taproot. Fruit is 5-10 cm long. Erect and strong stem. Leaves are thick, glaucous, glabrous, very variable in shape, colour, size, and thickness. The flowers are rather large, up to 2 cm long.

Flowering and fruiting: Around the year.

Ecology: The ideal soil is rich sandy loam. *Brassica* originated in temperate regions, grow best in cool, moist climates and at higher altitudes in the tropics.

Economic value: *B. oleracea* is used for large food reserves, which are stored over the winter in its leaves. Essential nutrients, including vitamin C present. The leaves of *B. oleracea* had cleansing properties, mild laxative, anti-inflammatory, glaucoma, and pneumonia protective compound.

Geographical distribution: It's native to Western and Southern Europe including Asia.

Representative Specimen: Chandpur, 20-06-2019; TSJ-116 (DUSH)/30 (Cited).

Part use: Leaves

Ailments name: Blood purifier, Cardiac complaints.

Treatment Mode: Leaf is taken as salad, Cooked leaf is taken as vegetable. (Cited by Soyeb, Reshma, Monjurul, Foysal, Faruk..).

Plant Name: *Brassica nigra* (L.) W.D.J. Koch. Deutschl. Fl. ed. 3, Vol. 4: 713 (1833) (Cruciferae).

Synonym: *Sinapis nigra* L. (1753), *Brassica sinapoides* Roth (1830), *Sisymbrium nigrum* (L.) Prantl (1884).

Local Name: Sorisha shak

Description: A far branched annual herb. Leaves are variable, petiolate, and huge in young plants. Inflorescences terminal or axillary, bractless racemes. Bisexual flowers, fruit capsule like, 4-sided flat sides. Seed globose and seedling with epigeal germination.

Flowering and fruiting: June – August.

Ecology: Cultivated areas, mainly in kitchen gardens.

Economic value: The seeds are used as diaphoretics, diuretics, emetics, medicine, painkillers, and stimulants. Seed tea is used to cure pharyngitis and to alleviate respiratory diseases. Plants are characterized by glucosinolates, and mustard oil glucosides. The glucosinolate of *Brassica nigra*,

known as sinigrin, volatile allyl radical chemical irritant that is accountable for the pungent taste of black mustard.

Geographical distribution: *Brassica nigra* (L.) probably originated in the Middle East, Asia, Europe, and Ethiopian highlands.

Representative Specimen: Dhaka, 14-07-19; TSJ-54 (DUSH)/24 (Cited).

Part use: Leaves

Ailments name: Cardiac complaints.

Treatment Mode: Cooked leaf is taken as vegetable. (Cited by Tarequl, Sayful, Sumon, Imran, Subhan..).

Plant Name: *Brassica oleracea* L. var. *botrytis* L. Sp. Pl.2:667 (1753) (Brassicaceae)

Synonym: *Brassica cauliflora* Gars. (1764).

Local Name: Fulkopi

Description: Annual herb, Head of the *B. oleracea* Botrytis Group growing in West Bengal, India, at Hooghly near Bandel. The *Brassica oleracea* L. var. *costata*. The plant presents thick-stemmed collard with floppy leaves, together, round, smooth, notched on the margins, and cooked or raw eaten.

Flowering and fruiting: May-June

Ecology: Simply grown up in organically made, systematically damp, well-drained loams fully sun, decorative cabbage and kale area unit cool weather plants that require cool temperatures to provide best leaf colours.

Economic value: *Brassica oleracea* incorporates a sensible name for fighting cancer as a result of it contains massive amounts of antioxidants and fiber. Broccoli exhibits a high content of flavonoid, phenolic resin compounds, carotenoids, quercetin, and ascorbic acids, with high inhibitor. Because of its content of carotenoids, this vegetable has conjointly been suggested for cataract hindrance.

Geographical distribution: *B. oleracea* L. var. *oleracea* is indigenous to South-western Europe, the Mediterranean region.

Representative Specimen: Chandpur, 20-06-19; TSJ- 117 (DUSH)/74 (Cited).

Part use: Flower.

Ailments name: Antioxidant, Blood purifier, Cardiac complaints

Treatment Mode: 1 cup boiled flower is taken with salt. Cooked flower is taken as vegetable, Boiled flower paste is taken with boiled rice. (Rasel, Saiful, Bikash, Liton, Khan..).

Plant Name: *Cajanus cajan* (L.) Millsp., Publ. Field. Mus. Nat. Hist. Bot. Ser. 2: 53 (1900) (Fabaceae).

Synonym: *Cytisus cajan* L. (1753), *Cajanus indicus* Spreng. (1826).

Local Name: Orohor

Description: An erect shrub, much branched. Stem pubescent. The leaves are trifoliolate and pinnately trifoliolate and the rachis is short, elliptic or lanceolate, and acute. Flowers are yellow, bracteate, and pubescent. Fruit pod like, linear-oblong, inflated, beaked, yellow or green, straight, pubescent and glandular, dehiscent. Seeds are rounded, compressed, and brown color.

Flowering and fruiting: December-April.

Ecology: Cultivated in plain lands, crop fields, roadsides, grasslands, and gardens, grows during a big selection of soil from sands to significant black soil.

Economic value: Dry seeds contain water, protein, fat, carbohydrates, fibre, and ash. Fresh seeds contain vitamins, provitamin A and vitamin B. Cajan is used for food poisoning, as well as for colic and constipation. Young stems are used to cure gingivitis, stomatitis, and as a toothbrush.

Geographical distribution: It's grown up everywhere in the tropics, however is of most importance within the Indian landmass and geographical region.

Representative Specimen: Chattogram, 24-05-19; TSJ-12 (DUSH)/149 (Cited).

Part use: Seed

Ailments name: Blood purifier, Cardiac complaints

Treatment Mode: Cooked leaf juice is taken, Cooked seed is taken. (Habib, Harun, Sarwar..).

Plant Name: *Camellia sinensis* (L.) O. Kuntze. Acta Horti Petrop. 10:195 (1887) (Theaceae)

Synonym: *Thea sinensis* L. (1753), *Camellia thea* Link (1822), *C. theifera* Griff. (1854).

Local Name: Tea, Cha

Description: An evergreen, multi-stemmed, ligneous plant up to 3 m tall. The leaves are alternate and have a short leaf stalk blade. Flowers are axillary, single, 2-4, 2.5-4 cm in diameter. Fruit with a subglobose capsule. Planate or seed round on one side. Spermatophyte with epigeal germination.

Flowering and fruiting: Around the year.

Ecology: Tea originated from monsoon climates but is varying from Mediterranean to tropical climates. The whole canopy tea crop becomes saturated at 75% of full sunlight at high altitudes in tropical areas, Tea is more productive without shade, but during hot periods in Assam and Bangladesh. Shelter belts of trees are beneficial in protecting tea against prevailing strong winds.

Economic value: The leaves are infused in hot water referred to as "tay" or "cha" by the Chinese, the beverage derives its refreshing properties of specific polyphenolic compounds and caffeine. Tea contains caffeine which accustomed to increase alertness. Tea has been used for cancer prevention to lower cholesterol, and to prevent Parkinson's disease.

Geographical distribution: *C. sinensis* grow in the lower elevation forest on ground Asia from South-western China to North-eastern India, Myanmar.

Representative Specimen: Chandpur, 20-06-2019; TSJ-118 (DUSH)/67 (Cited)

Part use: Leaves

Ailments name: Antioxidant, Blood purifier, Cardiac complaints, High blood pressure.

Treatment Mode: Cooked leaf juice is taken. (Cited by Nazmul, Tabassum, Nusrat..)

Plant Name: *Cardiospermum halicacabum* L., Sp. Pl.: 366 (1753). (Sapindaceae)

Synonym: *Cardiospermum halicacabum* L. var. *microcarpum* (H. B & K.) Blume (1847).

Local Name: Bontepari, Lataphatkari

Description: Annual or perennial climbing herb or subshrub, branched, up to 3 m tall. The stems are slender, glabrous, 5-grooved, or sparsely hairy. Alternate, compound, and biternate leaves. Flowers are unisexual, 2–3.5 cm long and zygomorphic. Sepals are 4 broadly ovate to broadly elliptic. Ovary superior, oblong. Fruit is a globular capsule that has been inflated about 4 mm in diameter, hilum prominent, dull-black, smooth, glabrous, white, cordate, rather large.

Flowering and fruiting: July – November.

Ecology: *C. halicacabum* is vary because of ecological condition, in overwet or seasonal climates, sporadically flooded places. It grows sunny places, like wild, grassland, roadsides, and altitudes up to 1500 m.

Economic value: The seeds contain oil, stearic, oleic, linoleic acids, arachidic, lignoceric, alcohol, triterpenoids and steroids. The latter fraction showed medicinal drug activity. Ethanolic leaf extract taken for fall in blood pressure and bradycardia in isolated organ preparations.

Geographical distribution: Throughout the world.

Representative Specimen: Chattogram, 24-05-19; TSJ-44 (DUSH)/23 (Cited).

Part used: Whole plant, Fruit.

Ailments name: Antioxidant, Cardiac complaints

Treatment Mode: 1 ml of juice is taken with 1 ml of water, 4/5 fruit is boiled with water and the juice is taken. (Cited by Ismail, Kawser, Islam..).

Plant Name: *Carica papaya* L., Sp. Pl.: 1036 (1753) (Caricaceae).

Local Name: Pepe

Description: A quick-growing tree-like herb, 2-10 m tall and branchless. Leaves are spirally organized, clustered close to the apex of the trunk, leafstalk up to 1 m long, hollow, dark Green, or purplish-green. Male, female or hermaphrodite, axillary flowers found on separate trees. Male flowers are 25-100 cm long, sessile pendent, scroll cupular. Intermediate flowers occur also. Fruit is fleshy berry, pyriform, cylindrical or grooved. Seeds around five millimeters in diameter.

Flowering and fruiting: July-October.

Ecology: Papaya grows in well-drained soils, lightweight, soil pH of 6.0-6.5. It's well-drained and not too dry. It will tolerate any reasonable soil provided.

Economic value: Ripe fruit is edible. The approximate contents of phosphorus, fat, carbohydrates, water, protein, fiber, ash, potassium, calcium, thiamine, iron, sodium, vitamin A, vitamin C, vitamin B, and B vitamin. Major sugars are sucrose, glucose and fructose.

Geographical distribution: Throughout the tropical subtropic areas of the globe.

Representative Specimen: Chattogram, 24-05-19; TSJ-18 (DUSH)/ 37 (Cited).

Part used: Leaves, Fruit.

Ailments name: Antioxidant, Blood purifier, Cardiac complaints, High blood pressure.

Treatment Mode: Leaf juice is taken, Young fruit is taken as the dish, Young fruit is taken as a vegetable, Ripe Fruit is taken. (Cited by Hridoy, Emran, Israt, Sifat, Aiyub..).

Plant Name: *Carissa congesta* Wight. (1848) (Apocynaceae)

Synonym: *Carissa carandas* L., Mant. 1:52 (1767)

Local Name: Koromcha

Description: An erect or ligneous tree armed with stout, straight, spines on upper branches which is simple and the lower branches branched. Leaves area opposite, simple, obtuse, coriaceous. The

inflorescence cymes. Flowers area unit odorous, bracts linear and white. Stamens 5, enclosed, filaments short, anthers, disk absent. Ovary superior, 2-celled, ovules four in every cell, stigma bushy, fruit ovoid, ellipsoid, purplish black and 4 seeded.

Flowering and fruiting: December to April.

Ecology: Throughout subtropic and tropical regions.

Economic value: *Carissa* plants are used to treat various diseases such as skin diseases, coughs, asthma, tuberculosis and colds. Fresh juices are made with boiling water, decoction of leaves and flowers of *Carissa* species. It is used as a relieving agent for irritable cough due to its liquefying the sputum and soothing action on the nerves.

Geographical distribution: Native and cultivated in India, Philippines, Bangladesh, Sri Lanka, Myanmar, and Malaysia. Wide cultivated additionally in Thailand, Indo-China, and East Africa.

Representative Specimen: Chattogram, 24-05-19; TSJ- 2 (DUSH)/67 (Cited).

Part used: Fruit, Root

Ailments name: Cardiac complaints, High blood pressure.

Treatment Mode: Fruit is taken with salt, Root juice is taken. (Cited by Sobuj, Ferdous, Shakil, Shefa, Ali..).

Plant Name: *Cassia fistula* L., Sp. Pl. 1: 377 (1753) (Caesalpiniaceae).

Synonym: *Cathartocarpus fistula* (L.) Pers. (1805).

Local Name: Sonalu.

Description: A deciduous tree, very young shoot silky white. The bark of young trees ash-colored and swish turns brown and rough once recent. Leaves compound, acute or shortly acuminate, dark and shining on top of, silvery pubescent beneath at early stage. Flowers bright yellow, showy. Fruits a pod, cylindrical rectangular, woody, swish and divided among, stuffed by brown to a black sweet pulp, become black when dry. Seeds ovoid, flattened.

Flowering and fruiting: March- June.

Ecology: Road side, Gardens.

Economic value: The pods are used for the treatment of diabetes. In trendy medication, *Cassia fistula* fruit pulp is used medicine. Except for its medicinal properties, It is planted as a decorative, usually on roads. Roots are applied to purify wounds, skin issues, fever.and ulcers.

Geographical distribution: Within the tropics, cultivated or decorative plant in New Guinea, Philippines.

Representative Specimen: Dhaka, 14-07-19; TSJ-69 (DUSH)/ 14 (Cited).

Part used: Leaves, Fruit.

Ailments name: Antioxidant, High blood pressure.

Treatment Mode: Leaf juice is taken, 4/5 gm fruit is taken with a half cup of milk and drink the mixture twice a day. (Cited by Ashik, Helal, Mamun..).

Plant Name: *Cassia occidentalis* L., (1753) (Caesalpiaceae)

Synonym: *Senna occidentalis* Roxb., Fl. Ind. 2.343 (1832)

Local Name: Kolkasunda

Description: Annual herb, subglabrous, foetid. Leaves are compound, alternate, acuminate, stipulate, stipules obliquely cordate. Inflorescence axillary and panicle. Flowers are pentamerous, hypogynous, pedicelate, bisexual, zygomorphic. Sepals 5, gamosepalous, petals 5 polypetalous, with distinct claw, stamens 10, unequal in size, carpel 1, ovary superior, unilocular, Fruit pod like, dehiscent, woody, glabrous, recurved, subcompressed, distinctly torulose.

Flowering and fruiting : Around the year.

Ecology: Roadsides, disturbed sites, pastures, waste areas, grasslands, open woodlands, coastal surround, and crops in tropical, subtropic, and semi-arid regions.

Economic value: *Cassia occidentalis* L. is used as a traditional medicine. This plant was noted to possess antimalarial drug, medicinal drug, bactericide, antifungal, inhibitor, hepatoprotective, and immunological disorder activity.

Geographical distribution: *S. occidentalis* is grown in warm areas of the world except for Australia.

Representative Specimen: Chandpur, 20-06-19; TSJ -119 (DUSH)/23 (Cited).

Part use: Flower

Ailments name: Chest pain

Treatment Mode: One gram of dried flower powder is taken with milk twice a day. (Cited by Sohel, Faruk, Shuvo..).

Plant Name: *Catharanthus roseus* (L.) G. Don, Gen. Hist. 4: 95 (1837) (Apocynaceae).

Synonym: *Vinca rosea* L., (1759), *Lochnera rosea* L., Reichb. (1828)

Local Name: Nayantara

Description: Perennial herb or sub ligneous plant, leaves hairless, glandular, leafstalk with glands in angle, apex rounded, cymes axillary, flowers white or pink, scroll five lobate, curlicue tray formed, stamens 5, follicles a pair of, cylindrical.

Flowering and fruiting: All the year

Ecology: Cultivated

Economic value: Major compounds are present in *C. roseus* such as serpentine, akuammine, lochnerine, catharanthine, ajmalicine and tetrahydroalstonine. A decoction of all components of the plant are used to deal with diarrhoea, malaria, diabetes, cancers, pores and skin diseases. Ajmalicine and serpentine are present in roots, while catharanthine and vindoline acquired in aerial parts. It is also considered as diaphoretic, diuretic, haemorrhage, dyspepsia, dysentery, toothache, indigestion, purgative, vermifuge, vomitive, and depurative.

Geographical distribution: Throughout the tropics and sometimes within the climatic zone.

Representative Specimen: Dhaka, 14-07-19; TSJ-50 (DUSH)/13 (Cited).

Part used: Leaves, Root

Ailments name: Blood purifier, High blood pressure.

Treatment Mode: Leaf juice is taken, Root juice is taken in an empty stomach. (Cited by Sujon, Rakib, Marjana..).

Plant Name: *Centella asiatica* (L.) Urban in Mart., Fl. Braz. 11 (1): 187 (1879) (Apiaceae).

Synonym: *Hydrocotyle asiatica* L. (1753)

Local Name: Thankuni.

Description: Perennial herb, creeping stem, nodes with long stolons. Leaves simple, on a brief shoot at every node, plate unsubdivided, typically hairless. Flowers typically three, lateral ones pedicellate, pedicels

Flowering and fruiting: March-December

Ecology: Moist lands and damp places.

Economic value: The whole plant used for skin-related diseases. Fresh leaves extract are applied for the treatment of scleroderma, lupus, leprosy, keloids, ulcers, phlebitis, and wounds. The

essential oil isolated by steam, sesquiterpenoids as the major category, β -caryophyllene, α -copaene, trans- β -farnesene, α -humulene, and germacrene-D as the most abundant.

Geographical distribution: The 40 species of *Centella* contains tremendous diversity in South Africa, South-East Asia and extending into some semitropic regions.

Representative Specimen: Dhaka, 14-07-19; TSJ-67 (DUSH)/37 (Cited).

Part use: Leaves

Ailments name: Blood purifier.

Treatment Mode: 4 ml leaf juice is taken with one spoonful of honey and drink the mixture in empty stomach. (Cited by Alomgir, Jannatul, Monira..).

Plant Name: *Chenopodium album* L., Sp. Pl. 1:219 (1753) (Amaranthaceae)

Local Name: Bothua-shak

Description: Annual herb, erect, branched, green, roots stout and tapering. Stems erect, branched towards apex, cotyledons petiole, lanceolate-linear, epidermal cells, leaves alternate, simple ovate to rhomboid-oval, lanceolate, linear, sessile, and glabrous. All leaves densely covered with small, utriculate hairs. Flower small, sessile, green, calyx, and sepals present. Inflorescence irregular, spikes clustered, seed circular or oval.

Flowering and fruiting: February-March.

Ecology: *Chenopodium album* is widely distributed species of weeds in the world and mostly colonizers as it moves into new areas.

Economic value: The nutritional composition of *Chenopodium album* leaves are water, energy, protein, fat, carbohydrate, fibre, Ca, P, vitamin A, thiamin, riboflavin, niacin, ascorbic acid. Fruits have shown antipruritic, antinociceptive activities, biliousness, abdominal pains, eye diseases, throat troubles, piles and diseases of blood, heart and spleen.

Geographical distribution: Throughout the globe.

Representative Specimen: Manikganj, Dhaka, 26-08-19; TSJ- 101 (DUSH)/15 (Cited).

Part use: Whole plant

Ailments name: Blood purifier

Treatment Mode: The cooked plant is taken as vegetable. (Cited by Shorna, Momin, Bristi..).

Plant Name: *Cinnamomum tamala* Nees & Eberm. Bot. 2: 426 (1831) (Lauraceae)

Synonym: *Laurus tamala* Buch.-Ham. (1822), *Laurus cassia* Roxb. (1832).

Local Name: Tejpata

Description: *Cinnamomum tamala* is an evergreen tree height up to 10 - 20 metres. The bole diameter is 20 cm.

Flowering and fruiting: March-May

Ecology: It prefers a fertile, moisture, sandy, & drained soil preferable. Young plants grow well in shade, but older trees do well in full sun.

Economic value: The bark and leaves have the sources of essential oils and area unit have medicinal properties. The dried bark is used for the treatment of stomach-ache, colic and diarrhea. The essential oils more effective than the synthetic antifungal agents, griseofulvin, clotrimazole, or nystatin.

Geographical distribution: It grows Himalayas and Northern parts of India.

Representative Specimen: Dhaka, 14-07-19; TSJ-81 (DUSH)/65 (Cited).

Part use: Leaves

Ailments name: Antioxidant, Blood purifier, Cardiac complaints

Treatment Mode: Dried leaf powder is used as spice, Soaked in hot water overnight and then water is taken in the next morning, 3 gm leaf powder mixed with 300 ml water boiled for few minutes and drink the juice. (Cited by Mumtahina, Shorna, Nayem, Rajib..).

Plant Name: *Cinnamomum verum* J. Presl, Prin. Rostlin 2: 36 (1825) (Lauraceae)

Synonym: *Cinnamomum zeylanicum* Blume (1826)

Local Name: Darchini.

Description: A medium sized evergreen tree. Leaves are coriaceous, ovate-lanceolate, coriaceous, shining, subacute and acuminate. Flowers are small, numerous, usually longer than the leaves. Fruit are oblong, dry and dark purple color.

Flowering and fruiting: January – March.

Ecology: Planted.

Economic value: *Cinnamomum verum* is a small tree. *Cinnamon* is used for the treatment of polygenic disease and different conditions. The aqueous extract of this plant enhances the glycogen synthase activity and activate the insulin receptor by diverse mechanisms.

Cinnamomum verum yields principally leaf and bark oils, that area is used in perfumery and flavorer. The main element of the leaf oil is eugenol whereas the bark oil is cinnamaldehyde. It's used because of the remedy for the treatment of metastasis, digestive, and gynecological ailments. A diagnosis and clinical study confirmed the medication and antimicrobial properties of cinnamon, which conjointly reduces vas diseases and risk of colonic cancer, improves psychological feature performance, and reduces cardiovascular disease.

Geographical distribution: It's native to the land and southern parts of India.

Representative Specimen: Dhaka, 14-07-19; TSJ-56 (DUSH)/80 (Cited).

Part use: Bark

Ailments name: Antioxidant, Blood purifier, Cardiac complaints.

Treatment Mode: Bark powder is taken as spice, Bark powder is taken with honey, Bark is soaked with water overnight and then water is taken in the next morning in empty stomach. (Cited by Shihab, Sourov, Sawon..).

Plant Name: *Cissus quadrangularis* L. Syst. nat. ed. 12(2): 124 (1767) (Lauraceae)

Synonym: *Vitis quadrangularis* (L.) Wight and Arnott (1834).

Local Name: Harjora

Description: A deciduous, bald climber. Succulent, quadrangular, almost winged stems, leaves variable, ovate or triangular, apex rounded, margins distantly serrate, petiole present, stipules ovate, flowers crowded, sweet scented, petals present and seed obovoid.

Flowering and fruiting: June–July.

Ecology: Dry and semi- dry condition,

Economic value: Leaves or young stems are applied for wounds and burns. The crushed leaves or stem juice are applied for rheumatism to reduce the pain and to broken bones, Stem is given in asthma and powdered roots are used for indigestion and fractured bones.

Geographical distribution: Africa and Arabia, Mascarenes, Madagascar, India, Vietnam, Java, Sri Lanka, Thailand, and the Philippines.

Representative Specimen: Dhaka, 14-07-19; TSJ-77 (DUSH)/23 (Cited).

Part use: Leaves

Ailments name: High blood pressure

Treatment Mode: Leaf juice is taken. (Cited by Mizanur, Anisur, Shamim..).

Plant Name: *Citrullus lanatus* (Thunberg) Matsum. & Nakai Cat. sem. et spor. Horto bot. No 854 (1916) (Cucurbitaceae).

Synonym: *Momordica lanata* Thunberg (1794), *Citrullus vulgaris* Schrader ex Ecklon & Zeyher (1836), *Colocynthis citrullus* (L.) O. Kuntze (1891).

Local Name: Tormujh

Description: Monoecious, sometimes andromonoecious, spreading, annual tracheophyte. Scheme intensive however shallow. Stem thin, angular, and grooved. Leaves easy, alternate, oblong-ovate in define, cordiform at the base, flowers axillary, solitary and bushy pedicels, yellow in color. Fruit is an indehiscent pepo, globose to oblongoid or ellipsoid. Seeds scattered throughout the flesh.

Flowering and fruiting: January-April.

Ecology: A sunny weather is required for rapid fruiting. Humidity and rainfall give vegetative growth, flowering and induce leaf diseases.

Economic value: The composition present just like water, protein, fat, carbohydrates, vitamin A, vitamin B₁, vitamin B₂, niacin, and vitamin C. Seeds are rich in protein and fat.

Geographical distribution: All tropic and semitropic regions of the globe.

Representative Specimen: Chandpur, 20-06-19; TSJ- 120 (DUSH)/98 (Cited).

Part use: Fruit

Ailments name: Antioxidant, Cardiac complaints, High blood pressure.

Treatment Mode: Outer surface of the fruit is taken as salad, Ripe Fruit is taken, Young Fruit is taken as vegetable. (Cited by Mili, Sadia, Meghna, Sifat..).

Plant Name: *Citrus aurantifolia* (Christm. & Panzer) Swingle, J. Wash. Acad. Sci. 3: \$65 (1913) (Rutaceae)

Synonym: *Limonia aurantifolia* Christm. & Panz. (1777), *Citrus javanica* Blume (1825), *Citrus notissima* Blanco (1837).

Local Name: Kagojilebu.

Description: An evergreen, branched, small, and spiny tree. Leaves alternate, elliptic, crenate, oblong, petioles narrowly winged, flowers white, small. Fruit globose, ovoid berry, greenish-yellow. Seeds small, ovoid, pale, smooth with white embryos.

Flowering and fruiting: Around the year.

Ecology: Gardens.

Economic value: Yellow colored fruit usually has a very acid juice named citric acid. It has water, carbohydrates, fibre, vitamin A, protein, fat, vitamin C. The rich flavour and acid taste make hot and spicy dishes, or in the form of pickles and sauces. The refreshing qualities present in lime juice, lime tea and the use on other fruit. It is widely used because of its antibacterial, anticancer, antidiabetic, and antioxidant properties; moreover, it can protect liver, bone, heart, and urinary diseases.

Geographical distribution: Throughout the tropics and heat semitropic areas.

Representative Specimen: Dhaka, 14-07-19; TSJ-49 (DUSH)/65 (Cited).

Part use: Fruit

Ailments name: Antioxidant, Chest pain, High blood pressure.

Treatment Mode: Fruit juice is taken, 1 ml of fruit juice is taken with half glass of water, Outer surface of the fruit is taken as salad. (Cited by Nipa, Saleha, Kakoli, Munna, Kutubuddin..).

Plant Name: *Citrus grandis* (L.) Osbeck. (1757) (Rutaceae)

Synonym: *Citrus maxima* (Burm.) Merr., Interp. Rumph. Herb. Amb: 296 (1918).

Local Name: Jambura

Description: The tree is 16–50 feet tall, trunk thick and irregular branches. Leaf is alternate, ovate, winged, or elliptic, green color. The flowers single, fragrant and yellowish white.

Flowering and fruiting: March-April.

Ecology: The tree is widely cultivated for its green goods in tropical and semitropic regions.

Economic value: Raw flesh fruit contains water, carbohydrates, protein, and contains negligible fat. It presents 38 calories, and vitamin C. The peel is sometimes used to make marmalade or chocolate and also used in cooking or candied. Fruits are used for deserts, made into jams and considered nutritive and refrigerant. In general, citrus peel is used in flavouring, especially in sweet soup desserts. Leaves used in epilepsy, chorea, and convulsive coughs.

Geographical distribution: In tropical or sub tropical area.

Representative Specimen: Chattogram, 24-05-19; TSJ-3 (DUSH)/65 (Cited).

Part use: Fruit

Ailments name: Antioxidant, Blood purifier, High blood pressure.

Treatment Mode: Ripe Fruit is taken, Outer surface of the fruit is taken as salad, Fruit juice is taken. (Cited by Chameli, Mahmuda, Morsheda, Moushumi..).

Plant Name: *Citrus reticulata* Blanco. Fl. Filip.: 610 (1837) (Rutaceae).

Synonym: *Citrus nobilis* Andrews (1810) et auct. non-Lour. (1790), *Citrus deliciosa* Tenore (1840), *Citrus chrysocarpa* Lushington (1910).

Local Name: Komola lebu

Description: Small tree with twigs, leaves lanceolate, flowers singly arises, fruit is globose or subglobose berry, orange or light-orange when fully ripe. Seeds small, pointed at one end, with green embryo.

Flowering and fruiting: October- February.

Ecology: Sandy loam soil has excellent quality for growth. Fruit is produced in sub-tropical, humid tropical climates and under clay soils.

Economic value: Edible portion contains water, protein, fat, carbohydrates, fibre, vitamin A and vitamin C. Fruit are canned and juice is extracted from the fruit. Pectin and essential oils are derived from the rind.

Geographical distribution: All tropical and semitropic regions.

Representative Specimen: Dhaka, 14-07-19; TSJ-45 (DUSH)/82 (Cited).

Part use: Fruit

Ailments name: Antioxidant, Cardiac complaints, High blood pressure.

Treatment Mode: Outer surface of the fruit is taken as salad, Ripe Fruit is taken, Fruit juice is taken. (Cited by Tasnim, Sharmin, Foysal, Ekram, Motin..).

Plant Name: *Cocos nucifera* L., Sp. Pl.: 1189 (1753) (Arecaceae)

Synonym: *Cocos nana* Griff. (1851).

Local Name: Narikel.

Description: Tall perennial palm, trunk single, grey, round, straight. Leaves compound, green in both side. Female flowers usually much larger than the male flowers. Fruit green or yellowish, obovoid, covered with fibrous husk, brown endocarp, 1 seeded, seed covering with the endocarp.

Flowering and fruiting: March-July

Ecology: Roadsides, Coastal zone.

Economic value: The edible portion contains water, oil, protein, carbohydrates, fibre and ash. The coconut oil contains capric acid, lauric acid, caproic acid, myristic acid, caprylic acid, palmitic acid, oleic acid, linoleic acid, stearic acid, and arachidic acid. The roots are antipyretic and diuretic. Coconut milk is laxative, antidiarrhoeic, diuretic, skin diseases and teeth.

Geographical distribution: Throughout the globe.

Representative Specimen: Chandpur, 20-06-19; TSJ -121 (DUSH)/91 (Cited).

Part use: Fruit

Ailments name: Antioxidant, Blood purifier, Cardiac complaints, High blood pressure.

Treatment Mode: Cooked fruit is taken with sugar, Young fruit is taken, Young fruit is taken on an empty stomach. Young fruit juice is taken. (Cited by Asif, Sadman, Israt, Rashed, Sifat..).

Plant Name: *Corchorus capsularis* L., Sp. Pl.:529 (1753) (Tiliaceae)

Local Name: Path shak

Description: Annual herb, leaves petiolate, puberulous, blade ovate, flowers oppositifolious, short pedicellate, pedicels glabrous. Seeds many, angular, wrinkle.

Flowering and fruiting: June-November.

Ecology: In the plains where it is cultivated.

Economic value: *C. capsularis* contains good amount of protein, iron, β -carotene and potassium. The leaves are used for the treatment of digestion, laxative and stimulant. Leaves infusion has been used to reduce fever, and the roots and leaves are used against dysentery.

Geographical distribution: *Corchorus olitorius* is present in Southern Asia, Middle East, and Africa.

Representative Specimen: Chattogram, 24-05-19; TSJ-43 (DUSH)/21 (Cited).

Part use: Leaves.

Ailments name: Antioxidant, Blood purifier, Cardiac complaints, High blood pressure.

Treatment Mode: Cooked leaf is taken as a vegetable. (Cited by Elias, Amjad, Raihan, Borhan..).

Plant Name: *Coriandrum sativum* L., Sp. Pl. 1: 256 (1753) (Apiaceae).

Synonym: *Coriandrum majus* Gouan (1762), *C. diversifolium* Gilib. (1782), *C. testiculatum* Lour. (1790), non L. (1753), *C. globosum* Salisb. (1796).

Local Name: Dhonia

Description: An erect, annual, glabrous, profusely, branched herb, stem solid, suberect, finely striate. Leaves alternate, different size, yellow- green colored, and margined. Flowers heart shaped, white or pink, male flowers are small, fruits ovoid, schizocarp, yellow- brown and seeds attached to the fruits wall.

Flowering and fruiting: December- February

Ecology: Cultivated.

Economic value: It contains water, crude protein, fatty oil, carbohydrates, crude fibre, mineral constituents and essential oil. The oil consists of monoterpenoids and linalool. Other components such as essential oil, are α -pinene, γ -terpinene, geranyl acetate and fruits are used as a spice. Ground coriander fruits are also used as curry powder.

Geographical distribution: Throughout the globe.

Representative Specimen: Savar, 21-11-19; TSJ- 122 (DUSH)/12 (Cited).

Part used: Leaves, Seed

Ailments name: Antioxidant, Blood purifier, High blood pressure.

Treatment Mode: Leaf juice is taken, Seed soaked in water then the water is taken, Leaf paste is taken with boiled rice. (Cited by Akash, Jawadul, Sabiha, Amin, Tazrin..).

Plant Name: *Croton bonpladianum* Baill., Adansonia 4:339 (1863-64) (Euphorbiaceae)

Synonym: *Croton sparsiflorus* Morong (1832).

Local Name: Panimorich, Nakful gach.

Description: It's a delicate plant height up to 50 cm tall. The leaves have different shape, broadly lobed, slender and feathery. The flowers are borne in white or pink, small umbels, asymmetrical with the petals. The fruit is a globular, schizocarp, 3–5 mm in diameter, pollen size is 33 microns.

Flowering and fruiting: September - December.

Ecology: Underneath outrageous dry season conditions, the plant species survives modestly. *Croton bonpladianum* was gathered from the wild and locale conditions.

Economic value: The components of plant used as hepatoprotective, expanding of the body, antifungal, antimicrobial, medication, antitumor, anticancer, intense blockage, stomachy drops, inside abscesses, prophylactic, medication, disinfectan, counteracting, pain-relieving, repellent property against bugs, nematicide, anticoronary, a calming drug, larvicidal action, antihelmintic,

cholera, chicken pox, diarrhoea, dysentery, cold, coughs, liver complaints, epilepsy, gastric disorders, eye diseases, insanity, scurvy, sprains, malaria, and rheumatism.

Geographical distribution: Northern Africa and Southern Europe to Southwestern Asia.

Representative Specimen: Manikganj, Dhaka, 26-08-19; TSJ-102 (DUSH)/20 (Cited).

Part use: Leaves

Ailments name: Cardiac complaints, Antioxidant.

Treatment Mode: Leaf juice is taken with honey on empty stomach, Fresh leaf is chewed every morning with an empty stomach. (Cited by Karim, Uddin, Nezam..).

Plant Name: *Cucumis sativus* L. Sp. pl.: 1012 (1753) (Cucurbitaceae).

Synonym: *Cucumis hardwickii* Royle (1835).

Local Name: Sosha

Description: Annual, or climbing herb. Root is superficial, stem 4-5-angled, branched, robust. Leaves alternate, simple, in outline triangular-ovate. Flowers axillary, unisexual, occasionally hermaphrodite. Fruit pendulous, different shape, size and colour, globular and cylindrical. Seed flat, ovate-oblong in outline.

Flowering and fruiting: July-September.

Ecology: Anti-microbial, medication, tumor, anticancer, pain-relieving, repellent property against bugs, nematicide, anticoronary, antihelmintic, cholera, chicken pox, diarrhoea, dysentery, eye diseases, cold, coughs, epilepsy, gastric disorders, insanity, jaundice, malaria, liver complaints, scurvy and rheumatism.

Economic value: It contains water, protein, fat, carbohydrates, Ca, Fe, Mg, P, vitamin A, B1, B2, and vitamin C. The fruit is depurative, diuretic, in the treatment of blemished skin, as a poultice for burns and also used as a cosmetic for softening the skin.

Geographical distribution: Throughout the globe.

Representative Specimen: Savar, 21-11-19; TSJ- 123 (DUSH)/20 (Cited).

Part use: Fruit

Ailments name: Cardiac complaints

Treatment Mode: Fruit is taken as salad. (Cited by Sanzida, Alamin, Rahim, Mahmud, Nusrat, Arafat..).

Plant Name: *Cucurbita maxima* Duch, ex Lamk., Encycl. 2:151 (1786) (Cucurbitaceae)

Local Name: Mistikumra

Description: Annual or short-lived perennial herbs. Stem soft and round. Leaves neither rigid nor prickly, orbicular, serrate and shallowly lobed. Corolla lobes curved outwards. Fruit stalk soft, spongy, cylindrical, thickened not enlarged at the point of attachment of the fruit.

Flowering and fruiting: July-October.

Ecology: Pumpkins are cultivated in the tropics from the plains up to 1500 m altitude. Pumpkins grow in well-drained soil with a neutral or slightly acidic reaction, drought tolerant and little water resistant.

Economic value: It contains water, energy, protein, fat, carbohydrate, fibre, Ca, P, Fe, β -carotene, thiamin, ascorbic acid, riboflavin and seeds contain vitamin E. *C. maxima* seeds, fruits, flowers and leaves are used as traditional medicine for the treatment of urinary disorders, blood pressure constipation and the wound healing with dermal application.

Geographical distribution: All over the world.

Representative Specimen: Manikganj, Dhaka, 26-08-19; TSJ-103 (DUSH)/64 (Cited).

Part used: Fruit, Seed.

Ailments name: Antioxidant, Blood purifier, High blood pressure.

Treatment Mode: 1 glass fruit juice is taken with honey 3 times in a day, Seed paste is taken, Cooked fruit is taken as vegetable. (Cited by Sarifa, Mehedi, Azad, Tanzim, Mahmuda..).

Plant Name: *Curcuma longa* L., Sp. Pl.1:2 (1753) (Zingiberaceae).

Synonym: *Amomum curcuma* Jacq. (1776), *Kua domestica* Medic. (1790), *Stissera curcuma* Giseke (1792), *Curcuma domestica* Valet. (1918).

Local Name: Holud

Description: Leafy rhizomatous herb, rhizome orange or yellow inside, and strongly aromatic. Leaves 5-7, suberect, base sheath green. Flowers slightly exerted from the bracts.

Flowering and fruiting: August - October.

Ecology: Cultivated in high land.

Economic value: It contains water, protein, fat, carbohydrates, ascorbic acid. On steam distillation the rhizomes yield essential oil. Its major constituents are turmerone, ar-turmerone and zingiberene. Rhizome extract contains ethyl alcohol, acetone, methylene chloride, oleoresin,

curcumin, demethoxycurcumin and bis-demethoxycurcumin. It is yellow-orange colour, and essential oil gives it the typical aroma and flavour. *Curcumin* is a major isolated polyphenol from the rhizome of turmeric has a wide range of pharmacological effects such as inflammatory, anti-microbial, antioxidant, antitumor, and hepatoprotective activities.

Geographical distribution: It's wide cultivated around the tropics.

Representative Specimen: Manikganj, Dhaka, 26-08-19; TSJ-104 (DUSH)/52 (Cited).

Part use: Rhizome.

Ailments name: Antioxidant, Blood purifier, Cardiac complaints.

Treatment Mode: Juice drink with milk, Powder is used in cooking. (Cited by Akash, Shiblu, Alvi, Tania, Rawnok..).

Plant Name: *Cuscuta reflexa* Roxb. Pl. Corom. 2: 3, t. 104 (1798) (Cuscutaceae).

Local Name: Sornalota

Description: A parasite, stout, fleshy, forming dense yellow masses. Flowers are lax racemes, fruit capsule like, 4 seeded and seeds are black.

Flowering and fruiting: August- March

Ecology: On other plants.

Economic value: *Cuscuta reflexa* includes carotene, 6-7 dimethoxy coumarin, quercetin, amarbellin, hyperoside propenamide, reflexin and palmitic etc. Stem decoction is used for constipation and liver complaints. The traditional communities are used this plant as purgative, carminatives and skin diseases.

Geographical distribution: Common in the Indian landmass and therefore the larger range of mountains.

Representative Specimen: Manikganj, Dhaka, 26-08-19; TSJ-105 (DUSH)/12 (Cited).

Part use: Stem

Ailments name: Blood purifier.

Treatment Mode: Stem juice is taken. (Cited by Jewel).

Plant Name: *Cynodon dactylon* (L.) Pers., Syn. Pl. 1: 85 (1805) (Poaceae).

Synonym: *Panicum dactylon* L. (1753). *Cynodon glabratus* Steudel (1854). *C. polevansii* Stent (1927).

Local Name: Durva grass.

Description: Perennial grass, mat formed, and stoloniferous, Leaf linear lanceolate, acuminate, blue-green, flat, sparsely hairy.

Flowering and fruiting: July-December.

Ecology: Moist or dry waste places, Light or sandy soils, riversides, roadsides, lawn, or crop fields.

Economic value: Nitrogen concentrations of adequately fertilized Durba grass range from 2-3%, whereas inadequately fertilized grass or old material may only contain N. It contains low levels of acid, however toxicity symptoms in animals are rare. Durba grass is touched by ruminants, used in cut, to regulate erosion, and as turfgrass. *Cynodon dactylon* is used as a laxative, coolant, medicament, carminative, bleeding, skin troubles, brain and heart tonic.

Geographical distribution: All tropical and semitropical regions.

Representative Specimen: Dhaka, 14-07-19; TSJ-51 (DUSH)/18 (Cited).

Part use: Leaves

Ailments name: Blood purifier

Treatment Mode: Leaf juice is taken with goat milk. (Cited by Asad, Shakil..).

Plant Name: *Cyperus rotundus* L., Sp. Pl.:45 (1755).

Synonym: *Schoenus tuberosus* Burm. f. (1768), *Cyperus longus* (non-L.) K. Sch. & Laut. (1901), *Cyperus bulbosus* (non Vahl) Camus (1912)

Local Name: Mutha ghash

Description: Stoloniferous perennial, stolons terminated by an ellipsoid or globose-ovoid, blackish tuber. Leaves basal, several, blade linear.

Flowering and fruiting : May-September

Ecology: Roadsides.

Economic value: It is used as both fodder and medicinal properties. The oil extracted from the tubers was formerly used to make soap and also used as astringent, stomachic, diuretic, antispasmodic, aromatic, carminative, litholytic, sedative, stimulant, vermifuge, tonic or antibacterial.

Geographical distribution: Around the warmer parts of the globe.

Representative Specimen: Dhaka, 14-07-19; TSJ- 73 (DUSH)/20 (Cited).

Part use: Leaves

Ailments name: Blood purifier

Treatment Mode: 1 ml of leaf juice is taken in empty stomach. (Cited by Maruf).

Plant Name: *Daucus carota* L., Sp. Pl.: 242 (1753) (Apiaceae).

Synonym: *Daucus gingidium* L. (1753)

Local Name: Gajor, Carrot

Description: An annual or biennial erect herb, conical to cylindrical, reddish, reddish-violet or yellow, rarely yellowish-orange, the top of the roots often green. Fruits an oblong- ovoid schizocarp. Seed surface shallowly concave, and endocarp.

Flowering and fruiting: May- August.

Ecology: Cultivated land.

Economic value: It contains water, protein, carbohydrates, fibre, β -carotene, vitamin C, Ca and Fe. Seed contains essential oils, terpenoids, iso-coumarin, and ethylene. It is an important vegetable, even in tropical areas and are also consumed raw or cooked.

Geographical distribution: All over the world.

Representative Specimen: Savar, 21-11-19; TSJ-124 (DUSH)/87 (Cited).

Part use: Tuber

Ailments name: Antioxidant, Blood purifier, Cardiac complaints.

Treatment Mode: Juice is taken, Tuber is taken as salad, Tuber is taken directly. (Cited by Rohim, Motin, Hamim, Ahnaf, Rahim..).

Plant Name: *Dillenia indica* L., Sp. Pl. 1: 535 (1753) (Dilleniaceae).

Synonym: *Dillenia speciosa* Thund. (1791).

Local Name: Chalta.

Description: A medium- sized to large tree, bark smooth, orange-brown to dark orange. Leaves simple, alternate, oblong. Flowers solitary, white in color. Fruits indehiscent, enclosed inby enlarged fleshy sepals. Seeds without aril.

Flowering and fruiting: May to February.

Ecology: Forest.

Economic value: A complete of 4 compounds named lupeol, retinaldehyde, stigmasterol, betulinic acid isolated from the stem. Flowering tree possesses analgesic, antioxidant, antidiarrhoeal, antidiabetic, antimicrobial, antidiabetic, cytotoxic, wound healing, and hair waving activity.

Geographical distribution: Sri Lanka, India, Myanmar, China, Thailand, Malaysia. Cultivated as decorative, generally outside the area of natural distribution, e.g. within the Philippines.

Representative Specimen: Chattogram, 24-05-19; TSJ-5 (DUSH)/87 (Cited).

Part use: Fruit

Ailments name: Antioxidant, Blood purifier,

Treatment Mode: Fruit juice is taken with warm water, Fruit is taken as vegetable, Fruit is preserved as pickles. (Cited by Sifat, Nil, Ruja, Meghna, Borsha..).

Plant Name: *Dioscorea alata* L. Sp. pl.: 1033 (1753) (Dioscoreaceae).

Synonym: *Dioscorea globosa* Roxb. (1832), *D. purpurea* Roxb. (1832), *D. vulgaris* Miquel (1859).

Local Name: Gach alu, Chupri alu

Description: Dioecious, annual, glabrous herb. Root system fibrous, shallow, tubers single, different size, Leaves opposite, simple, alternate and ovate. Male inflorescence a spike. Female inflorescence a solitary, axillary spike. Fruit a transversely elliptical. Seed orbicular, winged all round.

Flowering and fruiting: Around the year.

Ecology: *D. alata* a plant of the subhumid to wet tropics.

Economic value: Tuber contains water, carbohydrates, fibre, protein, fat, ash, vitamin A, B₂ and vitamin C, lysine, and amylopectin starch. *Dioscorea* has therapeutic properties for curing various diseases such as arthritis, cold, leprosy, burns, stomach ache, fungal diseases, skin diseases, cough, contraceptive, dysentery, rheumatism, etc.

Geographical distribution: Throughout the tropics.

Representative Specimen: Chattogram, 24-05-19; TSJ-39 (DUSH)/19 (Cited).

Part use: Fruit

Ailments name: High blood pressure

Treatment Mode: Cooked fruit is taken as vegetable. (Cited by Rahman, Mizanur).

Plant Name: *Diplazium esculentum* (Retz.) Sw., Schrad. J. Bot. 1801 (2): 312 (1803) (Athyriaceae).

Synonym: *Hemionitis esculentum* Retz. (1791).

Local Name: Dheki-shak.

Description: Rhizome extensively creeping, branched and erect densely, scaly apex, scales darkish brown. Stipe strong, erect, tufted, pale, slightly scaly, grooved. Fronds in a crown. Texture subcoriaceous, rachis pubescent. Sori linear, one to each venule.

Flowering and fruiting: June– August.

Ecology: This pteridophyte vegetable typically grows on the facet of rivers or within the shady. In tropical and subtropic forests, ferns are surface plants, scattered from the seashore to the mountain slopes, some even living in the vicinity of volcanic craters. Along in the sides of river there are protected in rich organic soil.

Economic value: The nutritents concentrated of vegetable fern in lowlands indicate a result of proteins, water levels, ash content and fats. The plant is used for treating headache, fever, wounds, dysentery, diarrhea, antioxidant, skin infections, anti-inflammatory, antimicrobial, anthelmintic, and cytotoxic activities.

Geographical distribution: *Diplazium esculentum* found and used in East to South Asia.

Representative Specimen: Chattogram, 24-05-19; TSJ-33 (DUSH)/19 (Cited).

Part use: Leaves

Ailments name: High blood pressure.

Treatment Mode: Cooked leaf is taken as a vegetable. (Cited by Sujon, Helal, Faruk, Sohel..).

Plant Name: *Eclipta alba* L., Hassk., Pl. Jav. Rar.: 528 (1753) (Asteraceae).

Synonym: *Verbesina alba* L. (1753), *Verbesina prostrate* L. (1753), *Cotula alba* L. (1767).

Local Name: Kalokeshi.

Description: A diffuse or erect, much branched or rarely unbranched annual herb, stem red, fruit cypsela, leaves lanceolate, ovate or obovate, sessile, inflorescence capitulum, bracts ovate, covered by hairs.

Flowering and fruiting: Around the year.

Ecology: Damp wastelands, hill slopes, cultivated fields, roadsides, and drains.

Economic value: *Eclipta alba* (L.) contains active principles such as flavonoids, polyacetylenes, alkaloids, glycosides and triterpenoids. It has anti-diabetic effects and liver protection.

Geographical distribution: Pantropical

Representative Specimen: Dhaka, 14-07-19; TSJ-47 (DUSH)/11 (Cited).

Part use: Leaves

Ailments name: Blood purifier

Treatment Mode: 1 ml of leaf juice is taken with one cup of water. (Cited by Mamun, Ferdous).

Plant Name: *Elaeocarpus serratus* L., Sp. Pl.: 515 (1753). (Elaeocarpaceae)

Synonym: *Elaeocarpus oblongus* Gaertn. (1788).

Local Name: Jolpai

Description: It's a medium-sized whitish yellow wood tree with green fruits, size is 2.5 cm long, seed has a hard outer shell and slow for germination and can take up to 2 years.

Flowering and fruiting: October - January.

Ecology: In evergreen to semi-evergreen forests.

Economic value: *E. serratus* contains a good source of tannins, flavonoids, carotenoids, vitamin C and β -amirin. It is used for the treatment of diarrhea and dysentery. Leaves are used for rheumatism and as antidote to poison,

Geographical distribution: *E. serratus* grows in tropical area, Indian landmass, South East Asia and Indo-China,

Representative Specimen: Dhaka, 14-07-19; TSJ- 71 (DUSH)/96 (Cited).

Part used: Leaves, Fruit

Ailments name: Antioxidant, Blood purifier, Cardiac complaints, High blood pressure.

Treatment Mode: Leaf juice is taken, Fruit is preserved as pickles, Fruit is taken, Cooked fruit is taken as a vegetable. (Cited by Shuvo, Helal, Ashik, Nusrat, Tabassum..).

Plant Name: *Elettaria cardamomum* (L.) Maton (Zingiberaceae)

Synonym: *Amomum cardamomum* L. (1753), *A. repens* Sonnerat (1782), *Alpinia cardamomum* (L.) Roxb. (1819).

Local Name: Elach

Description: Perennial herb, up to 5 m tall, leaves petiolate up to 2.5 cm long, flowers bisexual, zygomorphic, about 4 cm long, calyx tubular and inflorescence a prostrate panicle, up to 1.2 m long, Fruit a globose or subcylindrical, angled seeds, 15-20 per fruit and about 3 mm long.

Flowering and fruiting: May to October.

Ecology: It's spreading in natural or semi-natural ecosystems with a comparatively high density.

Economic value: Fruit contains a vital oil, sugars, starch, protein, cellulose, silica, salt, and mineral. Seed contains essential oil mainly 1, 8-cineole, α -terpinyl, monoterpenes, hydrocarbons and sesquiterpenes. It is beneficial for lungs, pulmonary diseases, stomach pain, flatulence and gripping.

Geographical distribution: *E. cardamomum* wild in the evergreen forests of the Western Ghats in Southern India and Sri Lanka. It's wild in Myanmar, China, Malaysia, and other parts of the tropics.

Representative Specimen: Savar, 21-11-19; TSJ- 125 (DUSH)/62 (Cited).

Part use: Seed,

Ailments name: Antioxidant, Blood purifier, High blood pressure.

Treatment Mode: 4/8 pieces seed soaked in water overnight and take it next morning with empty stomach, Seed is chewed in empty stomach. Seed powder is taken as spice. (Cited by Israt, Rakibul, Forhad, Ali..).

Plant Name: *Enhydra fluctuans* Lour. Fl. Cochinch.: 511 (1790) (Asteraceae).

Local Name: Helencha.

Description: Annual herb, branched, and aquatic, leaves linear, oblong, base narrowed, glabrous on both surface. Flowers white in color, fruit a cypsela with hyaline ribs & few hairs at the tip.

Flowering and fruiting: January - April.

Ecology: Beel, pond.

Economic value: The leaves are bitter, cure inflammation, antioxidant, laxative, hepatoprotective, skin diseases, analgesic, bronchitis, leucoderma, anti-diarrheal, biliousness and small pox. The plant possesses glucoside, saponins, enhydrin and so on.

Geographical distribution: It's native to India, Bangladesh, Myanmar, Srilanka and a number of other places in South East Asia.

Representative Specimen: Chattogram, 24-05-19; TSJ-32 (DUSH)/87 (Cited).

Part use: Leaves

Ailments name: Antioxidant, Blood purifier, High blood pressure.

Treatment Mode: Cooked leaf is taken as vegetable, 20 ml leaf juice is taken with 1 gm of sugar, 2 ml of leaf juice is taken with 2 ml of kolmi juice and 2 ml of honey. (Cited by Harun, Sarwar, Nazmul, Jahan..).

Plant Name: *Ficus racemosa* L. var. *miquelli* (King) Corner, Gard. Bull. Singapore, 21: 35 (1965) (Moraceae).

Synonym: *Ficus chittagong* Miq. (1847).

Local Name: Jogdumur.

Description: A low tree, monoecious plant, bark greyish brown. Leaves alternate. Involucral bracts triangular, male and female flowers pedicillate, styles lateral and stigmas clavate.

Flowering and fruiting: May-July

Ecology: Moist areas near streams.

Economic value: It contains flavanoid glycosides, alkaloids, phenolic acids, steroids, and saponins. *Ficus racemosa* is used for the treatment of various disorders like liver disorders, diarrhoea, antiasthmatic, antioxidant, carminative, diabetes, hepatoprotective, astringent, anti-dysentery, haemorrhoids, leucoderma, antiulcer, menorrhagia, respiratory and urinary diseases.

Geographical distribution: Around the world.

Representative Specimen: Chattogram, 24-05-19; TSJ-7 (DUSH)/18 (Cited).

Part used: Leaves, Bark, Fruit.

Ailments name: Antioxidant, Blood purifier, High blood pressure.

Treatment Mode: Young leaf is chewed with boiled rice 3 times in a day, 2 ml of bark juice is taken with honey, Cooked fruit is taken as vegetable. (Cited by Ismail, Kawser, Emran..).

Plant Name: *Ficus religiosa* L. Sp. pl. 2: 1059 (1753) (Moraceae).

Synonym: *Ficus caudata* Stokes (1812), *Ficus superstiosa* Link (1822), *Ficus peepul* Griffith (1854).

Local Name: Pepal, Asswath.

Description: It is deciduous or semi-evergreen tree up to 30 metres tall and trunk diameter of up to 3 metres. The leaves are cordate shaped and 10–17 centimetres long The fruits are small figs 1–1.5 cm in diameter, green or purple colored.

Flowering and fruiting: November-January.

Ecology: *Ficus religiosa* grows in dry season, deciduous or semi-evergreen tree.

Economic value: There is a presence of phenols, steroids, alkaloids and flavonoids, tannins, vitamin K, lanosterol, methyl oleanolate, stigmasterol, lupen-3-one. The leaves and stems are used against bites of animals, astringent, laxative, antigonorrhoeal, diarrhoea, cholera, haemoptysis and fistula.

Geographical distribution: Southern China, Malaysia, Vietnam, Thailand, Middle East, Northern Africa and the United States.

Representative Specimen: Chattogram, 24-05-19; TSJ-4 (DUSH)/ 60 (Cited).

Part used: Root, Fruit, Leaves. .

Ailments name: Blood purifier, Cardiac complaints, High blood pressure.

Treatment Mode: 2 gm of root powder is taken with one spoon of water, Fruit powder is taken with water, Leaf powder is taken with water. (Cited by Islam, Rifat, Refat).

Plant Name: *Helianthus annuus* L. Sp. pl.: 904 (1753). (Asteraceae)

Local Name: Surjomukhi

Description: Annual herb, erect, usually 2-4 m tall. Stem erect, leaves opposite, ovate and spiral. Petiole long, blade cordate to ovate, apex acute or acuminate, glandular and non-glandular trichomes, veins prominent and forming a reticulate pattern. Inflorescence a terminal head. Fruit an achene. obovoid, flattened, slightly 4-angled with truncated tip and rounded base. Seedling with epigeal germination.

Flowering and fruiting: April-July.

Ecology: *Helianthus* is developed basically in cool mild to warm semitropical environments. It can be grown in drier regions but sunflower is unsuitable for humid climates.

Economic value: Seed contains water, protein, oil, other lipids, carbohydrates and ash. Sunflower oil contains stearic acid, palmitic acid, oleic acid, linoleic acid and a good source of Ca, P, K and vitamin B complex. It is used for the treatment of malaria, pulmonary complaints, diuretic, lung ailments, stomachic, rheumatic aches and pains.

Geographical distribution: All through the planet.

Representative Specimen: Savar, 21-11-19; TSJ-126 (DUSH)/58 (Cited).

Part use: Seed

Ailments name: Cardiac complaints

Treatment Mode: Seed oil is used in cooking. (Cited by Sobuj, Aiyub, Ferdous, Shuvo, Sujon..).

Plant Name: *Hemidesmus indicus* (L.) R. Br. in Ait. F., Hort. Kew. Ed. 2, 2:75 (1811) (Asteraceae)

Synonym: *Periploca indica* L. (1753), *Asclepias pseudo-sarsa* Roxb. (1824).

Local Name: Onontamul

Description: It's a slender, herb, laticiferous, or semi-erect bush. Roots are woody, aromatic, stem slender, thickened at the nodes, leaves opposite, short-petiole, lanceolate and green in color.

Flowering and fruiting: December and January.

Ecology: Around the tropical and subtropical parts of the world

Economic value: *H. indicus* roots contain octacosanoate, α amyryn, hexatriacontane and β -amyryn. Leaves contain tannins and flavonoids. It is used as astringent, diaphoretic, leprosy, diuretic, tonic, anti-pyretic, blood purifier, rheumatism, skin diseases, fever, asthma, bronchitis, syphilis, and other urinary diseases.

Geographical distribution: The plant is found in South Asia, West and South India.

Representative Specimen: Savar, 21-11-19; TSJ-127 (DUSH)/56 (Cited).

Part use: Root

Ailments name: Blood purifier

Treatment Mode: 1-3 gm root powder is taken after meal twice a day. (Cited by Hasan, Liton, Poran).

Plant Name: *Hibiscus rosa-sinensis* L., Sp. Pl.: 694 (1753) (Malvaceae).

Local Name: Joba.

Description: Stem copiously branched, woody, glabrous. Leaves hairless or circumstantially radial and easy bushy, ovate, acuminate. Flowers axillary, erect, or suspended.

Flowering and fruiting: January-December.

Ecology: House gardens and parks where it is grown as an ornamental.

Economic value: The phytochemical analysis showed that *Hibiscus rosa sinensis* contained tannins, anthraquinones, quinines, phenols, flavonoids, alkaloids, terpenoids, saponins, viscous glycosides, protein, amino acids, carbohydrates, reducing sugars, mucilage, essential oils, and steroids. Flowers and leaves are used for the abortion, protective, contraceptive, Diuretic, symptom, Bronchitis, Emmenagogue, Demulcent.

Geographical distribution: Around the tropics and semi-tropics.

Representative Specimen: Dhaka, 14-07-19; TSJ-80 (DUSH)/35 (Cited).

Part use: Flower

Ailments name: Antioxidant, Blood purifier, High blood pressure.

Treatment Mode: Dried flower powder is taken with boiled water. (Cited by Reshma, Khokon, Monjurul, Foysal.).

Plant Name: *Hymenodictyon orixense* (Roxb.) Mabb. Taxon 31: 66 (1982) (Rubiaceae)

Synonym: *Cinchona orixensis* Roxb. (1793), *Cinchona excelsa* Roxb. (1799)

Local Name: Bhuikadam

Description: Deciduous trees about 20 m tall, grey bark, Young branch is pubescent. Leaves simple, opposite, stipule lanceolate, interpetiolar, glabrous and petiole present. Inflorescence axillary or terminal racemes, flowers subsessile, elliptic, pendulous, 2-valved, winged seeds.

Flowering and fruiting: July-January.

Ecology: Tree grows in semi-evergreen forests.

Economic value: *H orixense* contains antioxidant activity and nitric oxide radical activity. It has been used in traditional medicine such as digestive, endocrine, reproductive, respiratory systems, gastrointestinal tract and urinary tract infection.

Geographical distribution: It's native in Indian Subcontinent, Philippines, and Indo-China,

Representative Specimen: Savar, 21-11-19; TSJ- 128 (DUSH)/6 (Cited).

Part use: Bark

Ailments name: Antioxidant, High blood pressure.

Treatment Mode: Bark is soaked with water overnight and then water is taken in the next morning in empty stomach. (Cited by Rasel, Habib, Bokor).

Plant Name: *Hyptis suaveolens* (L.) Poit. Ann. Mus. Par. 7:472, t. 29 (1806)

Synonym: *Ballota suaveolens* L. (1759).

Local Name: Tokma.

Description: Strongly aromatic, almost fetid herb. Leaves decussate, firmly herbaceous; petiole present. Inflorescence a verticillate. Calyx campanulate. Fruit usually consisting of 2 nutlets.

Flowering and fruiting: Around the year.

Ecology: Dry open localities, along streams and roadsides.

Economic value: It has essential oil glands that provide a pleasant odor. The compounds they contain in addition to essential oils are alkaloids, flavonoids, tannins, phenols and saponins. The stem, leaves and roots are used to treat wounds, colds, rheumatism, eczema, skin diseases, emmenagogue and stomachic properties.

Geographical distribution: America, South-East Asia, Mexico and India.

Representative Specimen: Savar, 21-11-19; TSJ- 129 (DUSH)/58 (Cited).

Part use: Seed

Ailments name: Cardiac complaints

Treatment Mode: 1 gm of seed is soaked with water overnight and then water is taken in the next morning in empty stomach. (Cited by Sobhan, Imran, Bikash, Faruk, Tarekul..).

Plant Name: *Ipomoea aquatica* Forssk., Fl. Aeg.- Middle Easterner.: 44 (1755) (Convolvulaceae).

Synonym: *Ipomoea reptans* Poir. (1814).

Local Name: Kalmi shak

Description: A glabrous, mud or floating on water, succulent, stem hollow, rooting at the nodes. Leaves ovate, lanceolate or linear, flowers one to few, in axillary cymes, corolla funnel-shaped. Fruit a capsule, persistent, glabrous, embracing the fruit, seeds densely grey pubescent or glabrous.

Flowering and fruiting: January-December.

Ecology: Wet lowlands, tanks or ditches.

Economic value: *Ipomea aquatica* contains manganese, starch, phosphate, protein, nitrates, fiber, sulphate and fat. It contains vitamins A, B1, C, K, alkaloids, flavonoids, reducing sugar and soluble carbohydrate. *Ipomoea aquatica* use as inflammation, carminative, fever, Jaundice, bronchitis, and also liver complaints.

Geographical distribution: Tropical Asia, South-East Asia, Africa, America and Oceania.

Representative Specimen: Manikganj, Dhaka, 26-08-19; TSJ-106 (DUSH)/10 (Cited).

Part use: Leaves

Ailments name: Antioxidant

Treatment Mode: Cooked leaf is taken as vegetable. (Cited by Soyeb, Jaber, Jahedul, Sajib, Rashed..).

Plant Name: *Ipomoea batatas* Lamk. Tabl. encycl. 1: 465 (1793) (Convolvulaceae)

Synonym: *Convolvulus batatas* L. (1753), *C. edulis* Thunb. (1784), *Batatas edulis* (Thunb.) Choisy (1833).

Local Name: Misti alu

Description: Herbaceous plant. Stems prostrate or ascending, or occasionally twining. Leaves arranged spirally with a phyllotaxy. Flowers axillary, solitary or in cymes, fruit a 5-8 mm long capsule with 1-4 seeds, seed about 3 mm long, black colored with very hard testa.

Flowering and fruiting: Around the year.

Ecology: Drought tolerant and short-day plant.

Economic value: Sweet tuberous roots are rich sources of starch, sugars, vitamin A, iron, vitamin C, pro vitamin and minerals. It is also a valuable medicinal plant having antidiabetic, anticancer, and anti-inflammatory activities.

Geographical distribution: Widely grown in tropical, subtropical and warm regions.

Representative Specimen: Dhaka, 14-07-19; TSJ-55 (DUSH)/56 (Cited).

Part use: Tuber

Ailments name: Antioxidant, Blood purifier, Cardiac complaints

Treatment Mode: Boiled tuber is taken, Boiled tuber is taken with boiled rice, Fried tuber is taken. (Cited by Khokon, Tanzia, Ayra, Jafor, Abdullah..).

Plant Name: *Kalanchoe pinnata* (Lamk.) Pres. (1805) (Crassulaceae)

Synonym: *Bryophyllum calycinum* Salisb. (1805), *Bryophyllum pinnatum* (Lamk.) Oken. Allg. Natur. Vol. 111 (3): 1966 (1841).

Local Name: Pathorkuchi

Description: perennial shrub, succulent, about 1 m tall, with a substantial barrel-formed stem and a reddish for youngest and it blooms a huge part of the year. The leaves of this species are leaf-stem combination called phylloclades. The terminal inflorescence is a panicle, with various swinging, red-orange blooms. The ovary has 4 carpels.

Flowering and fruiting: Around the year.

Ecology: In tropical evergreen and deciduous woods, similarly as montane forest areas.

Economic value: *K. pinnatum* is rich in triterpenes, alkaloids, glycosides, flavonoids, steroids, and lipids. Leaves are used to treat gastric ulcer, headaches, kidney stones, anti-inflammatory, pulmonary infection, hypotensive and wounds.

Geographical distribution: In tropical and subtropical districts.

Representative Specimen: Chattogram, 24-05-19; TSJ-42 (DUSH)/35 (Cited).

Part use: Leaves

Ailments name: High blood pressure.

Treatment Mode: Leaf juice is taken. (Cited by Hasan, Faruk).

Plant Name: *Lablab purpureus* (L.) Sweet. Hort. Brit. Ed. 1:481 (1827) (Fabaceae)

Synonym: *Dolichos lablab* L. (1753), *Lablab niger* Medic. (1787).

Local Name: Shim

Description: The plant is variable because of extensive breeding in cultivation. However, they are annual or short lived perennial climber. The wild species is lasting. The thick stems are 6 meters long. The leaves are made up of 3-pointed leaflets. The inflorescence is made of racemes of many blossoms. The natural product is a legume pod variable in shape, size, and color. The seeds are white, brown, red, or dark relying upon the cultivar.

Flowering and fruiting: January-March

Ecology: *Lablab* is a short-day plant and grow well in high temperatures. It prefers rainfall.

Economic value: Seed powder contains debris, fat, protein, dietary fiber, omega-6 fatty acid linoleic acid and omega-3 linolenic acid.

Geographical distribution: It is cultivated throughout the tropics.

Representative Specimen: Chattogram, 24-05-19; TSJ-25 (DUSH)/81 (Cited).

Part used: Seed, Flower, Fruit

Ailments name: Antioxidant, Blood purifier, Cardiac complaints, High blood pressure.

Treatment Mode: Cooked seed is taken, Flower is taken with salt, Fruit paste is taken with boiled rice, Cooked fruit is taken as vegetable. (Cited by Jaber, Reshma, Tarequl, Foysal, Monzurul..).

Plant Name: *Lactuca sativa* L. Sp. pl.: 795 (1753). (Asteraceae).

Synonym: *Lactuca serriola* L. var. *sativa* Moris (1840-1843), *L. scariola* L. var. *hortensis* Bisch. (1851), *L. scariola* L. var. *sativa* Boiss. (1875).

Local Name: Lettuce pata

Description: Glabrous, lactiferous or biennial herb, stem organized spirally. Leaves variously arranged, depending on cultivar. Fruit a narrowly obovate, inflorescence dense, corymbose and flowers arranged in heads.

Flowering and fruiting: Around the year.

Ecology: Lettuce develops best at moderate temperatures with long-day reaction. The root system of lettuce is relatively small, which makes the crop very vulnerable in dry condition.

Economic value: The leaves contain water, protein, fat, fibre and ash. Butterhead lettuce contains about Ca, Fe, vitamin B₁, vitamin B₂, niacin and vitamin C. The leaf sap contains lactucarium, which is used for antispasmodic, diuretic, hypnotic, digestive, narcotic and sedative properties.

Geographical distribution: Around the world.

Representative Specimen: Savar, 21-11-19; TSJ-129 (DUSH)/53 (Cited).

Part use: Leaves

Ailments name: Antioxidant, Blood purifier, Cardiac complaints

Treatment Mode: Leaf juice is taken, Leaf is taken as salad, Leaf powder is taken for flavoring food. (Cited by Munira, Shumon, Subhan, Rasel, Saiful, Bokor..).

Plant Name: *Lagenaria siceraria* (Molina) Standl., Publ. Field Mus. Nat. Hist. Chicago, B. Ser. 3: 435 (1930) (Cucurbitaceae).

Synonym: *Cucurbita lagenaria* L. (1753), *Lagenaria vulgaris* Seringe (1825), *L. leucantha* Rusby (1896).

Local Name: Lau.

Description: A huge, yearly, climbing spice. Stem extended, sulcate-angulate, pubescent. Two bilateral secretory glands at the juncture of petioles. Leaves ovate-cordate or reniform-ovate. Male flowers, long petioles and slender. Seeds obovate-oblong to triangular, white.

Flowering and fruiting: February to May.

Ecology: Sunny and well-drained soil.

Economic value: It contains water, protein, fat, carbohydrates, vitamin A, B₁, B₂ and C, niacin, Ca, Fe and P. It is documented to have immunomodulatory, hepatoprotective, antioxidant, anti-stress, cardioprotective, adaptogenic, antihyperlipidemic, analgesic, and anti-inflammatory properties.

Geographical distribution: All over the world.

Representative Specimen: Dhaka, 14-07-19; TSJ-64 (DUSH).

Part used: Leaves, Fruit.

Ailments name: Blood purifier, Cardiac complaints, High blood pressure.

Treatment Mode: Leaf is taken as a vegetable, Boiled fruit paste is taken with boiled rice, Fruit is taken as vegetable. (Cited by Rahat, Sabbir, Mehedi, Sohan, Sujon..).

Plant Name: *Lawsonia inermis* L., Sp. Pl.: 349 (1753). (Lythraceae).

Synonym: *Lawsonia spinosa* L. (1753), *Lawsonia alba* Lamk. (1789)

Local Name: Mehdi.

Description: A leaf sheathing shrub, sometimes growing into a small tree, bark genuinely smooth, rusty brown. Leaves opposite, ovate, obovate, obtuse, glabrous, and petioles very short. Flowers fragrant, slender. Flowers greenish- yellow or white. *L. inermis* documented the plant to have antifungal, antiparasitic, antibacterial, antiviral, anticancer, antidiabetic, anti-inflammatory, tuberculostatic, antifertility and wound healing properties.

Flowering and fruiting: July-December

Ecology: Cultivated land.

Economic value: Henna has the dyeing agent named lawsone or 2-hydroxy-1, 4-naphthaquinone. It has proteins, tannins, stearic acids, oleic, viscous oil, linoleic and α - and β -ionones.

Geographical distribution: All through tropics and subtropics.

Representative Specimen: Chattogram, 24-05-19; TSJ-13 (DUSH)/9 (Cited).

Part use: Leaves

Ailments name: Blood purifier

Treatment Mode: Dried leaf powder is taken with boiled water. (Cited by Samira, Mostafa, Masuda, Sohel, Siam..).

Plant Name: *Lens culinaris* Medic. Vorles. Churpf. Phys. Ges. 2: 361 (1787) (Fabaceae).

Synonym: *Lens esculenta* Moench (1794).

Local Name: Musur dal

Description: Annual, much-branched herb. Leaves with 3-8 sets of leaflets, flowers small, blue to white, in axillary racemes, pods rhomboidal, compressed and seeds lens shaped. Seedling with hypogeal germination. Lentils are nodulated by *Rhizobium leguminosarum*. Stipules lanceolate, peduncles, shorter or subequal.

Flowering and fruiting: February–May.

Ecology: Cultivated land.

Economic value: Crude extract of *Lens culinaris* is positive for presence of anthraquinones, sterol, tannins, flavonoids, saponins, and terpenes. Dry seeds contain water, protein, fat, carbohydrates, fibre and ash. *Culinaris* possesses antispasmodic, anti-diarrheal, and bronchodilator activities.

Geographical distribution: It is generally developed in calm and subtropical districts, and in the jungles at higher rises. It is generally significant in the Indian subcontinent.

Representative Specimen: Savar, 21-11-19; TSJ- 131 (DUSH)/36 (Cited).

Part use: Seed

Ailments name: Blood purifier, Cardiac complaints, High blood pressure.

Treatment Mode: Fried seed is taken, Boiled seed is taken, Boiled seed paste is taken with boiled rice. (Cited by Biplob, Taherul, Sourov, Hanif, Mojahid, Mahin..).

Plant Name: *Lycopersicon lycopersicum* (L.) Farewell (1900).

Synonym: *Lycopersicon esculentum* Mill. (1768). *Solanum lycopersicum* L. (1753).

Local Name: Tomato.

Description: Annual herb, pubescent and branched, stem solid, leaves arranged spirally and bisexual flowers.

Flowering and fruiting: During the winter season.

Ecology: Fields, homestead gardens.

Economic value: Fruit contains protein, fat, carbohydrates, Ca, Fe, niacin, Mg, P, water, vitamin A, B₁, B₂, C and alkaloid tomatine. Seeds contain semi-drying edible oil. Tomato contains cancer treatment agent of the breast, lung, ovaries, pancreas, bladder, cervix, colon, rectum, stomach, and prostate. It is also used to prevent diabetes, heart and blood vessels, cataracts, and asthma.

Geographical distribution: All over the world.

Representative Specimen: Dhaka, 14-07-19; TSJ-68 (DUSH)/53 (Cited).

Part use: Fruit

Ailments name: Antioxidant, Blood purifier, High blood pressure.

Treatment Mode: Young fruit is taken, Fruit is taken as salad. Young fruit is taken as a vegetable. (Cited by Redwan, Sarif, Jewel, Tony..).

Plant Name: *Malus domestica* Borkh. Theor. prakt. Handb. Frostbite. 2: 1272 (1803) (Rosaceae).

Synonym: *Malus pumila* Mill, *Pyrus malus* L.(1753), *Malus communis* Poir. ex Lamk (1804).

Local name: Apel

Description: Small or medium-sized tree, 5-10 m high. Throated stem and twigs. Leaves with elliptical recognition. The flowers are usually terminal on the prickles. Brown seeds, 2 in each cell.

Flowering and fruiting: Around the year.

Ecology: At high latitudes apple requires a mild growing season. A sufficiently cold winter to break dormancy and excellent soil conditions to limit stress.

Economic value: Apples contain antioxidant properties. *Domestica* leaves essential oil were characterized as phytol, α -farnesene, pentacosane, tricosane, podocarpene A and cis-3-hexenyl benzoate. The bark, is anthelmintic and soporific.

Geographical distribution: All over the world.

Representative Specimen: Dhaka, 14-07-19; TSJ-66 (DUSH)/50 (Cited).

Part use: Fruit

Ailments name: Cardiac complaints, High blood pressure.

Treatment Mode: At least one fruit is taken everyday, Fruit is taken as salad. (Cited by Rasel, Ariyan, Kartik, Sohel, Hridoy..).

Plant Name: *Mangifera indica* L., Sp. Pl.: 200 (1753) (Anacardiaceae).

Local Name: Aam.

Description: Medium or large-sized tree, crown dark green, dense and bushy ,bark grey- brown, shallow fissured and scaly, evergreen. Leaves simple, elliptic to lanceolate, apex blunt and flowers pinkish in color. Fruits are in different shape and size, skin yellowish, pulp pale yellow to orange, with or without fibres, with a sweet to sour taste. Seed 1 per fruit.

Flowering and fruiting: January-June

Ecology: Home side, street sides, plain land.

Economic value: Mango contains macronutrients such as carbohydrates, proteins, amino acids, vitamins, minerals, phenolic, lipids, fatty, organic acids, polyphenol, pigments, and volatile constituents. The major amino acids include cysteine, valine, arginine, lysine, leucine, phenylalanine, and methionine. Plant parts are used for the treatment of dentrifice, vermifuge, tonic, stomachic, laxative, antiseptic, rheumatism, astringent, diaphoretic, diarrhea, dysentery, anaemia, cough, and hypertension.

Geographical distribution: In the tropics and subtropics.

Representative Specimen: Chattogram, 24-05-19; TSJ-10 (DUSH)/90 (Cited).

Part used: Leaves, Seed, Fruit,

Ailments name: Cardiac complaints, High blood pressure, Antioxidant, Blood purifier.

Treatment Mode: Dried leaf powder is taken twice in a day, Seed paste is taken with boiled rice, Ripe Fruit is taken, 5-12 leaves are boiled with water and drink water in an empty stomach. (Cited by Emon, Sujon, Rahat, Mostafa, Sohan..).

Plant Name: *Mentha spicata* L., Sp. Pl.: 577 (1753) (Lamiaceae)

Local Name: Pudina.

Description: A strongly scented perennial herb. Stem quadrangular, grooved, glabrous below and pubescent above. Leaves petiolate, pubescent, elliptic lanceolate, serrate, acute. Corolla puberulous on both surfaces. Nutlets ovoid, brown, smooth.

Flowering and fruiting: August - September.

Ecology: Damp soil.

Economic value: Essential oil is characterized by menthone, limonene, carvone, 1,8-cineole and β -mycrene. Leaves tea has been used for the treatment of digestive disorders, diuretic, fevers, headaches, carminative, stomachic, and various minor ailments.

Geographical distribution: *Mentha spicata*, native to Europe, Asia, and China.

Representative Specimen: Dhaka, 14-07-19; TSJ-60 (DUSH)/49 (Cited).

Part use: Leaves

Ailments name: Cardiac complaints, High blood pressure, Antioxidant, Blood purifier.

Treatment Mode: 6/7 leaves are taken with boiled with water, Leaf juice is taken, Leaf is taken as salad, 2 leaves are chewed in every morning with empty stomach. (Cited by Piash, Azad, Reshma, Israt, Ohona..).

Plant Name: *Momordica charantia* L. var. *Charantia* C. B. Clarke in Hook. F. Fl. Brit. Ind. 2: 616 (1879) (Cucurbitaceae)

Synonym: *Momordica indica* L. (1754), *Momordica elegans* Salisb. (1796).

Local Name: Korola

Description: Herbaceous, vine up to 5 m long, leaves alternate, separate yellow male and female flowers present. Fruit has a warty exterior, oblong shaped, green in color and unripe fruit is white color.

Flowering and fruiting: June-November.

Ecology: Upland or hydromorphic regions in the timberland.

Economic value: Phenolic acids such as catechin, chlorogenic, gallic acid, gentisic acid and epicatechin present. *Momordica charantia* a climbing vine whose leaves and fruits are green, bitter, used to fight diabetes, cancer, and many infectious diseases. It is also a powerful component against HIV/AIDS. Medicinal properties of the plant include anticancerous, antimutagenic, antimicrobial, antihelminthic, antitumourous, abortifacient, antifertility, antidiabetic.

Geographical distribution: In tropical and subtropical regions.

Representative Specimen: Manikganj, Dhaka, 26-08-19; TSJ-107 (DUSH)/48 (Cited).

Part use: Fruit

Ailments name: Antioxidant, Blood purifier, Cardiac complaints, High blood pressure.

Treatment Mode: Fruit juice is taken with 1 ml of honey in an empty stomach, Cooked fruit is taken as vegetable, Boiled food paste is taken with boiled rice, Fruit juice is taken. (Cited by Sabbir, Rahman, Rikab, Nazmul..).

Plant Name: *Moringa oleifera* Lamk. Encycl. 1(2): 398 (1785). (Moringaceae).

Synonym: *Moringa pterygosperma* Gaertn. (1791), *Moringa polygona* DC. (1825), *Moringa zeylanica* Pers. (1830).

Local Name: Sajna.

Description: A small tree. Stem with corky bark, young shoots greenish-white puberulous. Leaves opposite, compound, alternate, ovate to obovate. Flowers zygomorphic, pentamerous white. Fruit an elongated capsule. Seeds many winged.

Flowering and fruiting: October to March

Ecology: The plant is well adapted at lower elevations, drought tolerant, fertile, well-drained soils are suitable for this plant.

Economic value: Fruit contains water, vitamin A, B₁, B₂, niacin, vitamin C, Ca, P, protein, fat, carbohydrates, ash, fibre and Fe. The leaves contain water, carbohydrates, ash, fibre, protein, fat, vitamin A, B₁, B₂, C, niacin, P, and Fe. *Moringa oleifera* reduces blood sugar and cholesterol. It also have antioxidant and anti-inflammatory effects.

Geographical distribution: Throughout the tropics.

Representative Specimen: Dhaka, 14-07-19; TSJ-78 (DUSH)/86 (Cited).

Part use: Leaves

Ailments name: Antioxidant, Blood purifier, Cardiac complaints, High blood pressure.

Treatment Mode: 2-5 leaves are chewed in empty stomach, 7 gm leaf powder is taken with water everyday, Leaf paste is taken with boiled rice, Leaf is taken as vegetable. (Cited by Tanjim, Sultana, Shiblu, Alvi..).

Plant Name: *Murraya koenigii* (L.) Spreng., Syst. Veg. 2:315 (1825) (Rutaceae)

Synonym: *Bergera koenigii* L. (1771), *Chalcas koenigii* (L.) Kurz (1875).

Local Name: Karipata

Description: It is a small tree, 4–6 m tall, with a trunk up to 40 cm diameter. The sweet-smelling leaves are pinnate, white blossoms and seed.

Flowering and fruiting: July-August.

Ecology: It fills best in very much depleted soils in regions with full sun or fractional shade, ideally away from the breeze.

Economic value: Mixtures found in curry tree leaves, bark, and stems. Seeds include cinnamaldehyde or numerous carbazole alkaloids, which includes mahanimbine, girinimbine, and mahanine. *Murraya koenigii* is used for the treatment of diabetes. The leaves infusion is drunk to stop vomiting. A sap of the leaves is applied to skin eruptions and bruises.

Geographical distribution: In the tropics

Representative Specimen: Chattogram, 24-05-19; TSJ-26 (DUSH)/79 (Cited).

Part use: Leaves

Ailments name: Antioxidant, Blood purifier, Cardiac complaints

Treatment Mode: One cup of leaf juice is taken with margarine and black pepper, 4 new leaves are taken in the empty stomach, Leaf juice is taken. (Cited by Sahadat, Akash, Nasir).

Plant Name: *Musa paradisiaca* L., Sp. Pl.: 1043 (1753) (Musaceae).

Synonym: *Musa sapientum* L. (1759).

Local Name: Kola.

Description: Tree like herb. Leaves petiolate, oblong, outer tepals long, fleshy, pink, and inner tepals ovate, acute and concave. Fruits fleshy, oblong, seedless and longer in the cultivated varieties.

Flowering and fruiting: Around the year.

Ecology: Roadsides, kitchen gardens, waste land, banks of rivers and ponds.

Economic value: Fruit contains fat, carbohydrates, water, protein, fibre. It is rich in potassium, vitamin C, vitamin B6, vitamin A, thiamine, riboflavin and niacin. The flower of this plant is used for ulcers, diarrhea, dysentery, and bronchitis and cooked flowers are good food for diabetics. The juice of the root is restorative and febrifuge

Geographical distribution: All through the tropics and the subtropics.

Representative Specimen: Chattogram, 24-05-19; TSJ-23 (DUSH)/83 (Cited).

Part used: Leaves, Flower, Fruit

Ailments name: Blood purifier, Chest pain, Cardiac complaints, High blood pressure.

Treatment Mode: Leaf is taken as vegetable, Flower juice is taken at least for 15 days, Young Fruit is taken as vegetable, Ripe Fruit is taken. (Cited by Sharif, Alomgir, Sohel, Tania, Hasanul..).

Plant Name: *Nerium indicum* Mill. (1786) (Apocynaceae)

Synonym: *Nerium oleander* L., Sp. Pl.: 209 (1753).

Local Name: Korobi

Description: It grows up to 6 m tall, with erect stems. The leaves are thick, leathery, dark-green, and lanceolate. Leaves are greenish color, and flowers grow in clusters at the end of each branch, white, pink to red, 5-lobed, and sweet-scented.

Flowering and fruiting: Around the year.

Ecology: *Oleander* grows in warm subtropical regions, used as an ornamental plant in roadsides or private gardens.

Economic value: Glycosides present just like gentiobiosyl, oleandrin, neriine, cardenolides, and odoroside are present. Pharmacologically active compounds are present, including rosagenin, rutin, folinerin, and oleandomycin have been identified in the plant. The flowers and leaves of *Nerium indicum* used to stimulate cardiac muscles, eliminate blood stasis, heart failure, cancer, anti-neoplastic, sedation, anti-bacterial, anti-inflammatory, anthelmintic effects and relieve pain.

Geographical distribution: Mediterranean areas of Africa and Europe, through W. Asia to the Indian subcontinent, Myanmar and China.

Representative Specimen: Chattogram, 24-05-19; TSJ-36 (DUSH)/17 (Cited).

Part use: Root

Ailments name: Cardiac complaints

Treatment Mode: 500 gm root powder is taken with honey. (Cited by Dewan, Robiul, Rezaul).

Plant Name: *Nigella sativa* L., Sp. Pl.: 753 (1762) (Ranunculaceae).

Synonym: *Nigella indica* Roxb. (1824), *Nigella cretica* Miller (1768), *N. indica* Roxb. ex Fleming (1810).

Local Name: Kalojira.

Description: Annual herb, pubescent, hairs glandular. Stem erect, simple or branched, leaves opposite, segments linear, and divergent. Flower single, fruit follicle, longitudinally united and seeds ovoid.

Flowering and fruiting: Around the year. .

Ecology: Cultivated fields

Economic value: Essential oil present they are, p-cymene and α -pinene, carvacrol, anethole and α -terpineol. Seed contains tannins, the alkaloids, the sterols cholesterol, nigellimine N-oxide and nigelline, campesterol, stigmaterol, β -sitosterol, α -spinasterol. It has hepatoprotective, anticancer, analgesic, antimicrobial, anthelmintics, anti-inflammatory, renal protective, antihypertensive, antidiabetic, gastroprotective, and antioxidant properties.

Geographical distribution: *N. sativa* is likely native to the Middle East, Asia and India.

Representative Specimen: Savar, 21-11-19; TSJ-30 (DUSH)/35 (Cited).

Part use: Seed

Ailments name: Blood purifier, Cardiac complaints, High blood pressure.

Treatment Mode: Seed paste is taken with boiled rice, One ml of seed oil is taken with one cup of milk, One ml of seed oil is taken with one ml of honey. (Cited by Mahmuda, Nasir, Tania, Hasanul, Rakibul).

Plant Name: *Nyctanthes arbor-tristis* L. Sp. Pl. 1: 6 (1753) (Oleaceae).

Synonym: *Nyctanthes dentata* Blume (1849).

Local Name: Shiuli

Description: Shrub or a small tree up to 10 m tall, with grey bark. The leaves are simple, opposite, broad, with an entire margin and clusters of 2-7 together. The flowers are fragrant, with 5-8 lobed white corolla with an orange red centre. The fruit is a bilobed, flat brown heart-shaped to round capsule and each lobe containing a single seed.

Flowering and fruiting: Autumn.

Ecology: In dry deciduous forest, Dry hillsides.

Economic value: The leaves contain flavanol glycosides, astragalins, nicotiflorin, D-mannitol, β -sitosterol, oleanolic acid, nyctanthic acid, methyl salicylate, amorphous glycosides, tannic acid and ascorbic acid. The essential oils present they are nyctanthin, α -pinene, D-mannitol, carotenoids, tannins, glycosides. Seeds contain arbortristosides A and B, glycosides and alkaloids. *Nyctanthes arbor-tristis* used in various ailments like fever, blood dysentery, malaria, cough and gastritis. Juices of leaves is used as antidote to reptiles venome and digestives. Seeds are used to cure piles, skin diseases, and infection.

Geographical distribution: It is native to South Asia and Southeast Asia.

Representative Specimen: Dhaka, 14-07-19; TSJ-57 (DUSH)/8 (Cited).

Part use: Leaves

Ailments name: Antioxidant, Blood purifier.

Treatment Mode: Boiled leaf juice is taken, Leaf juice is taken with honey. (Cited by Ahsan, Dipok, Fahad, Riya).

Plant Name: *Nymphaea nouchali* Burm.f. Fl. Ind.:120 (1768) (Nymphaeaceae).

Synonym: *Nymphaea malabarica* Poir. (1798), *Nymphaea stellata* Willd. (1799).

Local Name: Shapla

Description: A perennial herb, leaves elliptic, orbicular, rounded, often blotched with purple or dull red on the under surface, petioles and pedicles 20-150 cm long or more with star shaped cells on the margin of air spaces. Seeds enclosed by fleshy saccate aril.

Flowering and fruiting: June-October.

Ecology: Inland stagnant water bodies.

Economic value: *Nymphaea* species contains flavonoids. Powdered rhizomes are used in piles, dyspepsia and dysentery. The rhizome and peduncles are eaten as vegetables. Flowers are astringent and used as cardiac tonic. Seeds are used in cutaneous diseases.

Geographical distribution: Bangladesh, India, Myanmar, Indonesia, Sri Lanka, Vietnam, Thailand, Malaysia, and Philippines.

Representative Specimen: Dhaka, 14-07-19; TSJ-65 (DUSH)/47 (Cited).

Part use: Flower

Ailments name: Cardiac complaints

Treatment Mode: Flower is taken as a vegetable. (Cited by Shishir, Sujon, Zabir, Murad, Tanzania..).

Plant Name: *Ocimum tenuiflorum* L. (1753) (Lamiaceae).

Synonym: *Ocimum sanctum* L. (1757), *Geniosporum tenuiflorum* (L.) (1921).

Local Name: Tulshi.

Description: An aromatic perennial herb, stem quadrangular, hairy, often purplish, woody below. Leaves long petiole, nutlets subglobose, compressed, smooth, pale brown or reddish with small markings.

Flowering and fruiting: Around the year.

Ecology: Gardens, specially near temples.

Economic value: Many chemical constituent present in *Ocimum sanctum* such as, oleanolic acid, eugenol, ursolic acid, rosmarinic acid, germacrene, carvacrol and β caryophyllene, *Sanctum* possess anti-microbial, antidiabetic, antifertility, anticancer, antifungal, analgesic, anti-spasmodic cardioprotective, and adaptogenic actions.

Geographical distribution: Tropical and subtropical Asia.

Representative Specimen: Chattogram, 24-05-19; TSJ-11 (DUSH)/32 (Cited).

Part use: Leaves

Ailments name: Antioxidant, Blood purifier.

Treatment Mode: 4/5 young leaves are chewed in empty stomach, Leaf juice is taken with honey. (Cited by Nusrat, Shakil, Habibur, Tamim, Plabon).

Plant Name: *Oldenlandia corymbosa* L. Sp. pl. 1: 119 (1753) (Rubiaceae).

Synonym: *Hedyotis corymbosa* (L.) Lamk (1792).

Local Name: Khetpapra

Description: Annual branched herb up to 60 cm long, 4-angled, lanceolate, up to 3cm long, leaves are elliptical to linear, fruit obovoid or broadly obovoid, corolla with lobes, white or pinkish. Seeds are compressed.

Flowering and fruiting: August – October.

Ecology: *Corymbosa* is a weed in fields, gardens, roadsides, sunny and stony locations.

Economic value: *Oldenlandia corymbosa* ten compounds have been isolated and elucidated as geniposide, 6 alpha-hydroxygeniposide, 6 beta hydroxygeniposide, asperulosidic acid. The plant activate blood circulation, toxins, promote diuresis, relieve stranguria, active against cholecystitis, appendicitis, hepatitis, pneumonia, urinary infection, cellulites and snake bite.

Geographical distribution: Africa, India and Malaysia.

Representative Specimen: Savar, 21-11-19; TSJ – 91 (DUSH)/7 (Cited).

Part use: Leaves

Ailments name: Blood purifier

Treatment Mode: Boiled leaf juice is taken. (Cited by Anwar, Sayeed).

Plant Name: *Oryza sativa* L., Sp. Pl. ed. 1, 1: 333 (1753) (Poaceae).

Synonym: *Oryza nivara* Shastry & Sharma (1965). *Oryza glutinosa* Lour. (1790), *O. montana* Lour. (1790), *O. praecox* Lour. (1790), *O. aristata* Blanco (1837).

Local Name: Dhan.

Description: Annual or perennial herb, nodes glabrous and rooting at the nodes. Leaf blades linear or lanceolate. Inflorescence a laxly panicle, partially included in upper leaf sheath or more usually exserted, erect in flowers, nodding in fruits in the cultivated races, remaining erect in the wild races.

Flowering and fruiting: September-June.

Ecology: Cultivated wetland.

Economic value: The endosperm additionally contains sugar, fat, rough fiber, nutrients, and inorganic matter. It contains water, protein, fat, carbohydrates, fibre and ash. Rice is a tonic herb that is diuretic, nutritive, urinary diseases, soothing, reduces lactation, improves digestion and controls sweating. The seeds are taken to treat excessive lactation and presence of minerals, phosphorus, and vitamins.

Geographical distribution: Tropics, subtropical and temperate areas.

Representative Specimen: Dhaka, 14-07-19; TSJ-72 (DUSH)/17 (Cited).

Part use: Seed

Ailments name: Cardiac complaints

Treatment Mode: Boiled seed is taken. (Cited by Nazmul, Mannan, Sadia, Israt, Munira..).

Plant Name: *Phyllanthus emblica* L., Sp. Pl.: 982 (1753) (Euphorbiaceae)

Synonym: *Emblica officinalis* Gaertn. (1790), *Dichelactina nodicaulis* Hance ((1852). *Emblica grandis* Gaertner (1790), *Emblica officinalis* Gaertner (1790), *Emblica arborea* Raf. (1838).

Local Name: Amalaki.

Description: A monoecious, glabrous, deciduous, bark grey, smooth, branches tawny- pubescent. Leaves triangular, petiolate, leaf blade oblong, flowers in axillary cymes, fruits subglobose, smooth, succulent, greenish or yellowish- white. Seeds trigonous, chestnut- brown.

Flowering and fruiting: March-September

Ecology: Village groove, scrub and dry open sparse forests.

Economic value: Fruit's bark and leaves contain tannin. Dry stem and bark contains only tannin and fruits belong to the group of gallotannins and ellagitannins, gallic acid, ellagic acid, and glucose. *Emblica* exhibits strong antioxidant activity, antiulcer, immunomodulatory, anti-inflammatory, hepatoprotective, and anticancer actions.

Geographical distribution: Around the world.

Representative Specimen: Chattogram, 24-05-19; TSJ-17 (DUSH)/97 (Cited).

Part use: Fruit

Ailments name: Antioxidant, Blood purifier, Cardiac complaints, High blood pressure.

Treatment Mode: Fruit is taken, Fruit is preserved as pickles, Fruit juice is taken, Fruit powder is taken with milk every day. (Cited by Zahirul, Rahman, Sabiha, Jahan, Mannan..).

Plant Name: *Piper nigrum* L. Sp. pl.: 28 (1753) (Piperaceae).

Synonym: *Piper aromaticum* Lamk (1791).

Local Name: Golmorich.

Description: A perennial woody climber. Orthotropic stems climbing and remaining vegetative, Leaves alternate, simple, glabrous, coriaceous, petiolate. Inflorescence a spike, opposite on plagiotropic branches. Flowers unisexual or bisexual. Fruit a globose drupe. Seed globose, 3-4 mm in diameter.

Flowering and fruiting: Around the year.

Ecology: Humid tropical, with well-distributed annual rainfall.

Economic value: It contains protein, starch, water, fibre and ash. 'Piperine" exhibits diverse pharmacological activities like antiplatelet, antioxidant, antitumor, antihypertensive, anti-asthmatics, analgesic, anti-inflammatory, anti-diarrheal, immunomodulatory, anticonvulsant, anti-thyroids, antibacterial, antispasmodic and antidepressants.

Geographical distribution: All over the world.

Representative Specimen: Chattogram, 24-05-19; TSJ-28 (DUSH)/17 (Cited).

Part use: Fruit

Ailments name: Antioxidant, High blood pressure.

Treatment Mode: Fruit powder is used as spice, 1 gm fruit powder is boiled with 2 ml of honey and then the mixture is taken. (Cited by Rudro, Zashim, Shakil, Riya, Dewan..).

Plant Name: *Polyalthia longifolia* (Sonn.) Thw. Enum. pl. zeyl. 5: 398 (1864) (Annonaceae).

Synonym: *Uvaria longifolia* Sonn. (1782), *Unona longifolia* (Sonn.) Dunal (1817).

Local Name: Debdaru

Description: Medium-sized tree up to 25 m tall, straight bole, twigs glabrous and dense crown. Leaves, lanceolate, ovate oblong, membranous, petiole 4-8 mm long, monocarps subglobose to ovoid. Flowers in axils of leaves, normally various petals, barely lanceolate, up to 1.2 cm long, greenish-yellow colored.

Flowering and fruiting: April – June.

Ecology: Grows normally in sub-sticky to damp subtropical and heat and humidities, for the most part, ice-free regions.

Economic value: Leaf oil presents allo-aromadendrene, α -humulene, caryophyllene oxide and (E)- β -caryophyllene beside β -selinene, and ar-curcumene. The plant has been used in traditional medicine for the treatment of diabetes, fever, hypertension, skin diseases, and helminthiasis.

Geographical distribution: Southern India, Sri Lanka, South-East Asia, Malaysia and Java.

Representative Specimen: Chattogram, 24-05-19; TSJ-41 (DUSH)/16 (Cited).

Part use: Bark

Ailment name: Cardiac complaints

Treatment Mode: 3-4 gram bark powder is taken with boiled water. (Cited by Sohel, Mozahid).

Plant Name: *Psidium guajava* L., Sp. Pl. 1: 470 (1753) (Myrtaceae).

Synonym: *Psidium pyriferum* L. (1753).

Local Name: Peyara

Description: A small tree, bark prominently scroll marked, overall smooth, grey and rust-brown which peels off in thin patches, not fibrous. Young twigs square, pubescent, green. Leaves shortly petiolate, round, hairy and channeled above, opposite, usually acuminate, rounded at the base, margin entire, subglabrous above. Flowers white. Disc broad, thick. Fruits a berry, globose, ovoid to pyriform, varying in size, green or yellowish-green when ripe. Seeds numerous, hard, reddish brown.

Flowering and fruiting: Around the year

Ecology: Homesteads, roadsides, and forests.

Economic value: Its fruits show the presence of moisture, crude fiber, protein, fat, ash, carbohydrates, minerals and vitamins. It is found to be effective in hypertension, diabetes, pain relief, diarrhea, dysentery, gastroenteritis, cough, liver damage inflammation and oral ulcers.

Geographical distribution: Throughout the tropics and subtropics.

Representative Specimen: Chattogram, 24-05-19; TSJ-14 (DUSH)/34 (Cited).

Part used: Leaves, Fruit.

Ailments name: Antioxidant, Blood purifier, High blood pressure.

Treatment Mode: Leaf juice is taken in empty stomach, Ripe fruit is taken, Young fruit is taken as a salad. (Cited by Biplob, Siam, Rahat, Masuda, Shishir...).

Plant Name: *Punica granatum* L., Sp. Pl.: (1753) (Lythraceae).

Local Name: Dalim

Description: A shrub or low tree, branchlets terete, often ending in a spine. Leaves opposite, clustered, leathery, oval, elliptic or oblong. Flowers often in pairs and terminal on short side twigs. Sepals thickly leathery and wide calyx tube adnate to the ovary. Petals long, scarlet, shortly clawed, wrinkled, and calyx lobes. Fruits yellow, often red adhering at the top, seeds many, testa coriaceous with a juicy outer coat, angular and ellipsoid,

Flowering and fruiting: January to December.

Ecology: Plainlands where it is cultivated.

Economic value: Fruit contains water, protein, fat, carbohydrates, fibre and minerals. Sugar content of up to 20% of glucose, citric acid, boric acid and vitamin C. Tannin content is highest in the root bark but the dried rind also contains much tannin. Alkaloids in the bark belong to the pyridine group. The pomegranate has been used in natural medicine to treat sore throats, digestive disorders, skin disorders, coughs, urinary infections osteoarthritis, cancer, and arthritis.

Geographical distribution: All through the tropics and subtropics.

Representative Specimen: Dhaka, 14-07-19; TSJ-58 (DUSH)/83 (Cited).

Part use: Fruit

Ailments Name: Chest pain, Cardiac complaints, High blood pressure, Antioxidant, Blood purifier

Treatment Mode: Fruit juice is taken, Dried fruit surface powder is taken with water, Ripe fruit is taken, Fruit is taken as a salad. (Cited by Ashraful, Rakib, Didar, Ohona, Rabbi..).

Plant Name: *Raphanus sativus* (L.) Domin. Sp. pl. 2:669 (1753) (Brassicaceae).

Synonym: *Raphanus caudatus* L. (1767).

Local Name: Mula

Description: Brassicaceous crops developed for their enlarged tap roots which can be round and hollow, globular, tightening. The root skin shading goes from green to dark, red, purple, yellow, and, yet the tissue is generally white. Leaves around 13 cm long with gather attaches to 2.5 cm in breadth or more slim, long roots up to 7 cm long. Leaves are rosette and lyrate shape. They are isolated pinnately with a broadened terminal projection and smaller lateral lobes.

Flowering and fruiting: October to January.

Ecology: *Raphanus sativus* is cultivated. .

Economic value: Red radish roots and leaves were described as far as their physical compound, nourishing, cancer prevention agent, and microbiological properties. The most bound phenolic compounds of roots and leaves were pyrogallol, coumaric acid, vanillic acid, epicatechin and respectively. It is taken directly for indigestion, astringent, acid regurgitation, diarrhea, and bronchitis.

Geographical distribution: Throughout the world.

Representative Specimen: Dhaka, 14-07-19; TSJ-63 (DUSH)/17 (Cited).

Part used: Leaves, Tuber.

Ailments name: Antioxidant, Blood purifier, Cardiac complaints, High blood pressure.

Treatment Mode: Leaf juice is taken with honey, Boiled fruit is taken with salt, Cooked fruit is taken as vegetable, Leaf is taken as vegetable. (Cited by Zannatul, Shihab, Tabassum, Shawon, Ruja.).

Plant Name: *Rauwolfia serpentina* (L.) Benth. Ex Kurz, Timberland Fl. Brit. Burm. 2: 171 (1877) (Apocynaceae).

Synonym: *Ophioxylon serpentinum* L. (1753).

Local Name: Swarpagandha.

Description: perennial herb, erect, glabrous, leaves in whorls of 3 thin, acute, lanceolate, bright green above and pale beneath. Flowers are irregular, white, corymbose cymes, often tinged with violet. Corolla tube, throat hairy, cymes dense, pedicels red.

Flowering and fruiting: April – June.

Ecology: Fills in both evergreen and deciduous woods as undergrowth.

Economic value: *Rauwolfia* contains a wide scope of phytochemicals, including alcohols, sugars and glycosides, unsaturated fats, flavonoids, phytosterols, oleoresins, steroids, tannins, and alkaloids. It contains dozens of alkaloids including ajmalicine, reserpine, ajmaline, and serpentine, among others. It also is used to treat severe agitation in patients with mental disorders. It is effective for the treatment of hypertension, nervous system, heart rate to slow and the blood vessels to dilate. Reserpine is in a class of medications called rauwolfia alkaloids.

Geographical distribution: All through the world.

Representative Specimen: Chattogram, 24-05-19; TSJ-34 (DUSH)/107 (Cited).

Part used: Root, Leaves.

Ailments name: Cardiac complaints, High blood pressure.

Treatment Mode: Root powder is taken after meal twice in a day, Leaf juice is taken. (Cited by Elias, Foysal, Chameli..).

Plant Name: *Rosa centifolia* L., Sp. Pl.:491 (1753) (Rosaceae)

Local Name: Golap.

Description: Plants are up to 1.5–2 m tall, with long, hanging stems and green pinnate leaves with 57 leaflets. The flowers are round and globular, with many petals, generally pink, less often white to dark purple red, and fragrant.

Flowering and fruiting: June-November.

Ecology: Reasonable for light, medium and weighty soils, lean towards very much depleted soil, and can fill in substantial dirt soil. It prefers moist soil.

Economic value: It contains up to 63% phenyl ethanol that gives the bloom its germ-free properties to treat skin break out for controlling control skin illnesses like psoriasis and atopic dermatitis. Anti-inflammatory and aphrodisiac action, of this plant is effective in various health issues like in intestinal ulcer, diarrhea etc. Rose plant have so many medicinal properties, which makes it very useful as blood purifier. The flowers are used for the production of perfume. .

Geographical distribution: All over the world.

Representative Specimen: Dhaka, 14-07-19; TSJ-53 (DUSH)/17 (Cited).

Part use: Leaves

Ailments name: Blood purifier

Treatment Mode: 6 gm leaf crushed is taken with 60 ml water. (Cited by Marzana, Depok, Meghna).

Plant Name: *Saraca asoca* (Roxb.) de Wild., Blumea 15: 394 (1968) (Fabaceae)

Synonym: *Jonesia asoca* Roxb. (1795).

Local Name: Ashok

Description: It is a medium-sized evergreen tree. The leaves are paripinnate, alternate, coppery red color when young and green when ripe, and are 30 to 60 cm long. The bark of stems is dark green, often marked with bluish-white.

Flowering and fruiting: July to October.

Ecology: Humid tropics with distributed rainfall. It grows well even in partially shaded places.

Economic value: *Saraca asoca* bark contains sterol, flavonoids, cardiac glycosides, terpenoid, lignin, phenolic compounds, and tannins. Bark of *Asoka* tree is astringent, tonic, sedative and styptic. The bark is also useful in dyspepsia, fever, internal bleeding, hemorrhagic dysentery.

Geographical distribution: The *Ashoka* tree present throughout the India, Nepal and Srilanka.

Representative Specimen: Chattogram, 24-05-19; TSJ-40 (DUSH)/16 (Cited).

Part use: Bark

Ailments name: Blood purifier

Treatment Mode: Bark soaked in water overnight and then water is taken in empty stomach. (Cited by Reshma, Rasel, Faruk).

Plant Name: *Scoparia dulcis* L., Sp. Pl.: 116 (1753) (Scrophulariaceae).

Synonym: *Scoparia grandiflora* Nash (1896), *Scoparia ternata* Forssk. (1775), *Gratiola micrantha* Nutt. (1822),

Local Name: Chinipata

Description: An erect, perennial herb. Stem branched, winged, puberulent at the nodes. Leaves tapering at the base, obovate-oblong, oblanceolate, subacute at the apex. Flowers usually glabrous, axillary, bracteoles absent. Corolla white, tube densely hairy at the throat, apex obtuse, upper lobe slightly larger than others. Calyx lobes divided to the base. Seeds reticulate, dull brown and oblong-cuneiform,

Flowering and fruiting: Almost Around the year.

Ecology: Waste places, roadsides, and occasionally mountain slopes.

Economic value: *Scoparia dulcis* is a rich source of flavones, terpenes, saponins, amino acids, coumarins, steroids, phenols, tannins, and carbohydrates. The main chemicals include scopadulcic acids A and B, scopadulciol, scopadulin, scoparic acids, scopadiol, and betulinic acid. It is used for digestive problems, diabetes mellitus, hypertension, bronchitis, and as an analgesic & antipyretic agent.

Geographical distribution: *S. dulcis* is native to America, South-East Asia, India and China.

Representative Specimen: Chattogram, 24-05-19; TSJ-27 (DUSH)/5 (Cited).

Part use: Leaves

Ailments name: High blood pressure.

Treatment Mode: Leaf juice is taken. (Cited by Saleha, Nasir, Dipok).

Plant Name: *Solanum melongena* L., Sp. Pl.: 189 (1753) (Solanaceae).

Synonym: *Solanum insanum* L. (1767), *Solanum coagulans* Forssk. (1775), *Solanum esculentum* Dunal (1833), *Solanum pressum* Dunal (1852).

Local Name: Begun.

Description: A woody herb or under shrub, often much branched. Leaves alternate, simple, stipules absent, ovate to oblong, hairy, base rounded to cordate. Flowers usually blue in color. Fruits a large pendent berry, globose to ellipsoid, ovoid or obovoid but very variable, smooth, shiny, purple or purplish violate, green, yellow, white or black colored. Seeds numerous, lenticular to reniform, light brown.

Flowering and fruiting: October to March.

Ecology: Cultivated land.

Economic value: Fruits contains carbohydrates, fibre, ash, Ca, Fe, water, protein, fat, vitamin B₁, vitamin B₂, niacin, vitamin C. Various plant parts are used for curing ailments such as diabetes, otitis, toothache, skin infections, cholera, bronchitis, dysuria, dysentery, asthenia and haemorrhoids.

Geographical distribution: In tropical and subtropical regions.

Representative Specimen: Savar, 21-11-19; TSJ-92 (DUSH)/33 (Cited).

Part use: Fruit

Ailments name: Antioxidant, Blood purifier, Cardiac complaints, High blood pressure.

Treatment Mode: Fried fruit is taken, Boiled fruit is taken with salt, Fruit is taken as vegetable, Boiled fruit paste is taken with boiled rice. (Cited by Sefa, Bokor, Poran, Sayed, Sampa...).

Plant Name: *Spilanthes oleracea* L., Syst. Nat. ed.12, 2: 534 (1767) (Asteraceae)

Synonym: *Spilanthes acmella* var *oleracea* C. B. Clarke (1876).

Local Name: Ushni shak, Rasunia

Description: Ornamental herb, leaves are broadly ovate to triangular, 4-8 cm wide and 5-11 cm long. The stems are prostrate or erect, reddish, hairless, disc florets, 2.7-3.3 mm long, achenes are

black, 2-2.5 mm long. Flower heads elongated-conical, containing primarily disc florets, 1-3cm long, 1.1-1.7 cm in diameter.

Flowering and fruiting: Around the year.

Ecology: This plant prefers well-drained, high organic soil. Seeds expose to cold weather. They need direct sunlight to germinate.

Economic value: The leaves and flower contain anthelmintic, pain-relieving, antifungal, and antibacterial components.

Geographical distribution: Frost-sensitive but perennial in warmer climates.

Representative Specimen: Chattogram, 24-05-19; TSJ-31 (DUSH)/6 (Cited).

Part use: Leaves

Ailments name: High blood pressure.

Treatment Mode: Cooked leaf is taken as a vegetable. (Cited by Rasel, Tanzia, Amzad).

Plant Name: *Spinacea oleracea* L. Sp. pl.: 1027 (1753) (Amaranthaceae).

Local Name: Palong shak

Description: Dioecious herb, annual, glabrous. Leaves rosette form is 25-50 cm in diameter. Leaves have no stipules, leaf blade angular-ovate, spirally arranged, simple, Inflorescence 80-150 cm high, branching. Seed dull, harshly margined. Fruit an utricle, indehiscent.

Flowering and fruiting: June-September.

Ecology: Soils should be light on the surface, prolific, all around depleted, wealthy in natural matter.

Economic value: It contains magnesium, manganese, iron, vitamin A, vitamin C, vitamin K, and folate. Spinach is a superb supply of vitamin B6, vitamin E, vitamins B, riboflavin and calcium, potassium, and nutritional fiber.

Geographical distribution: All over the world.

Representative Specimen: Savar, 21-11-19; TSJ- 93 (DUSH)/32 (Cited).

Part use: Leaves

Ailments name: Antioxidant, Cardiac complaints, High blood pressure.

Treatment Mode: Leaf juice is taken, Boiled leaf paste is taken with boiled rice, Cooked leaf is taken as vegetable. (Cited by Elias, Jawadul, Asif, Sumon, Hanif..).

Plant Name: *Spondias pinnata* (L. f.) Kurz in Pegu Rep.A.:44 (1875) (Anacardiaceae)

Synonym: *Mangifera pinnata* L. f. (1781), *Spondias mangifera* Wild. (1799).

Local Name: Amra

Description: A deciduous tree, leaves alternate, leaflets elliptic, inflorescence terminal raceme, flowers reddish or purplish, calyx small, slightly imbricate, petals 4-5, stamens 8-10, anthers ovoid and fruit a drupe.

Flowering and fruiting: March to October

Ecology: Dryland and cultivated land.

Economic value: *Spondias pinnata* removes showed the event of high return of flavonoids, quercetin and ellagic acid. *Spondias pinnata* bark is used in dysentery, diarrhoea, menstrual disorders, biliousness, arthritis, tuberculosis, for rubbing on the skin over painful joints. The fruit of *S. pinnata* rich in several amino acids named, glycine, alanine, cysteine, serine, and leucine. The bark paste is used for body pain and stomach.

Geographical distribution: Native to Bangladesh, Myanmar, China, Southern China, India, Thailand, and throughout Malaysia.

Representative Specimen: Dhaka, 14-07-19; TSJ-59 (DUSH)/46 (Cited).

Part use: Fruit.

Ailments name: Antioxidant, Blood purifier, Cardiac complaints.

Treatment Mode: Fruit is taken, Fruit juice is taken, Cooked fruit is taken as a vegetable. (Cited by Nipa, Rahim, Motin, Khaled, Arif..).

Plant Name: *Syzygium cumini* (L.) Skeels, USDA Bramble. Pl. Industr. Bull. 248: 25 (1912) (Myrtaceae).

Synonym: *Eugenia jambolana* Lamk. (1789), *Syzygium jambolanum* (Lamk.) DC. (1828), *Eugenia cumini* (L.) Druce (1914).

Local Name: Jam

Description: An enormous, semi-evergreen tree. Bark is light grey or brown color, all parts glabrous, terete, creamy, twigs slender, leaves opposite, petioled, different in size and shape, lamina pale yellowish- green. Seeds oblong, up to 3.5 cm long, green to brown. Flowers whitish, sessile, fruits berry, variable in size, usually ovoid, black and juicy.

Flowering and fruiting: March to June.

Ecology: Cultivated land, gardens, roadsides and other places.

Economic value: Fruit contains water, protein, fat, carbs, fiber, debris, Ca, P, Fe, riboflavin, niacin, vitamin A, thiamine, and vitamin C. Fruits are used for the treatment of diabetes, worm disease, asthma, loose bowels, hack, and cold. The bark contains diuretic, astringent and stomachic properties.

Geographical distribution: All through the tropics and subtropics.

Representative Specimen: Chattogram, 24-05-19; TSJ-15 (DUSH)/32 (Cited).

Part used: Fruit, Seed,

Ailments name: Antioxidant, Blood purifier, High blood pressure.

Treatment Mode: Ripe fruit is taken, 1 gm of seed powder is taken on an empty stomach, Fruit juice is taken. (Cited by Ohona, Harun, Dewan, Mina. Hasan..).

Plant Name: *Tamarindus indica* L., Sp. Pl. 1: 34 (1753) (Caesalpiniaceae).

Synonym: *Tamarandus occidentalis* Gaertn. (1878), *Tamarandus officinalis* Snare. f. (1878).

Local Name: Tetul

Description: A large tree, with spreading crown, young twigs pubescent, later on glabrous. Leaves paripinnately compound, stipulate, stipules minute, leaflets small, linear-oblong, unequal and rounded. Flowers pale or green-yellow, densely ciliated, pubescent on lower surface, glabrous on upper. Sepals yellowish, hairy at the base. Petals yellowish-orange, upper petals oblong. Fruit a pod, slightly incurved, thick, light brown, sour in taste. Seeds compressed, varying in shape, reddish-brown to blackish-brown with glossy firm testa.

Flowering and fruiting: April-December.

Ecology: Usually wastelands, backyards of houses, roadsides.

Economic value: Ripe fruits contain water, protein, fat, iron, thiamine, riboflavin, niacin, carbohydrates, fibre, ash, calcium, phosphorus, and vitamin C. Fresh seeds contain carbohydrates, water, protein, fat, and ash. It is used in wound healing, abdominal pain, dysentery, parasitic infestation, diarrhea, fever, malaria and respiratory problems.

Geographical distribution: All over South-East Asia.

Representative Specimen: Chattogram, 24-05-19; TSJ-37 (DUSH)/136 (Cited).

Part used: Fruit, Leaves.

Ailments name: Antioxidant, Blood purifier, Cardiac complaints, High blood pressure.

Treatment Mode: Fruit is preserved as pickles. The leaf is taken with boiled water, Ripe fruit is taken, Fruit juice is taken. (Cited by Tony, Sarif, Mahmuda, Sabina...).

Plant Name: *Terminalia arjuna* (Roxb. Ex DC.) Wight and Arn. Prodr.: 314 (1834)
(Combretaceae).

Synonym: *Pentaptera arjuna* (Roxb. Ex DC.) Wight & Arn., Prodr.: 314 (1834).

Local Name: Arjun.

Description: A medium to large tree, whitish or pinkish-grey, bark smooth, branchlets, horizontal, young branches pubescent. Flowers yellowish-white colored, sessile. Leaves opposite or subopposite, oblong, coriaceous, margin slightly crenulate, light brown beneath. Fruit an ovoid or ovoid-oblong, wings leathery, glabrous, truncate.

Flowering and fruiting : April-October.

Ecology: Roadsides and gardens and lawns around bungalows.

Economic value: *Arjuna* is a heart protective herb. Some phyto-chemicals are glycosides, terminic acid, arjunolic acid, tannins, oligomeric pro anthocyanidins, flavones, and b-sitosterol casuarinin, etc. It is used as panacea for all the problems, diseases and disorders of heart. It is also good for asthma, hypertension and kidney stones.

Geographical distribution: Throughout the tropics.

Representative Specimen: Chattogram, 24-05-19; TSJ-35 (DUSH)/174 (Cited).

Part use: Bark

Ailments name: Chest pain, Cardiac complaints, High blood pressure.

Treatment Mode: : Decocted with water and then drunk the water, Bark powder is taken in empty stomach, Soaked in water overnight and then water is taken in the morning. (Cited by Monjurul, Shourov, Rahman, Nazmul, Nusrat.).

Plant Name: *Terminalia bellirica* (Gaertn.) Roxb., Pl. Corom. 2: 54 (1798) (Combretaceae).

Synonym: *Terminalia punctata* Roth (1821), *Terminalia laurinoidea* Teijsm. and Binnend. ex Miq. (1855), *Terminalia bellirica* var. *laurinoidea* (Teijsm.& Binnend. ex Miq.) Clarke (1878). *Myrobalanus bellirica* Gaertn. (1791).

Local Name: Bohera

Description: Deciduous tree, bark thick, blackish, fissured and cracked. Leaves broadly elliptic to obovate-oblong, sometimes narrowly oblanceolate, sometimes whorled, apex rounded or obtuse. Flowers yellowish bud subglobose, sessile. Fruit a drupe, subglobose to broadly ellipsoid, very hard when dry and seeds ellipsoid.

Flowering and fruiting: March-November.

Ecology: Moist deciduous forests, and semi-evergreen and evergreen forests of low altitude.

Economic value: Ellagitannins, for example, corilagin, chebulagic corrosive, galloylpunicalagin, and digalloyl-hexahydroxydiphenoyl-hexoside were observed to be the significant parts in *Terminalia bellirica*. It is used to protect the liver, respiratory conditions, including respiratory tract infections, cough, and sore throat.

Geographical distribution: Nepal, India, Bangladesh, Sri Lanka, Burma, Thailand, Indo-China, and all through Malaysia.

Representative Specimen: Dhaka, 14-07-19; TSJ-48 (DUSH)/108 (Cited).

Part use: Fruit

Ailments name: Cardiac complaints

Treatment Mode: Soaked in water overnight and then drink the water in the next morning. (Cited by Shamim, Amzad, Borhan, Aiyub).

Plant Name: *Terminalia catappa* L. Mant. Pl. 1: 128, in: Syst. Nat. ed. 12, 2: 674 (err. 638) (1767). (Combretaceae).

Synonym: *Terminalia moluccana* Lamk (1783), *Terminalia procera* Roxb. (1832), *Terminalia latifolia* Blanco, non-Swartz (1837). *Terminalia mauritiana* Blanco (1845).

Local Name: Kath badam

Description: Deciduous tree, 10-25 m tall, moderate-sized tree. Leaves alternate, clustered at branch tips, short petioled, obovate. Fruit ovoid or ellipsoid drupe, flowers bisexual, axillary 8-16 cm long spikes and petals absent.

Flowering and fruiting: July-September.

Ecology: Saline soils and sandy or rocky beaches. It is very wind-resistant and it prefers medium shade or full sun.

Economic value: Several fatty acids contain such as palmitic acid, oleic acid, stearic acid, linoleic acid, and myristic acid. Fruits and leaves contain corilagin, gallic acid, ellagic acid, brevifolin

carboxylic acid with 75% moisture and 5% protein. *Catappa* leaves and fruits have anti-HIV reverse transcriptase, anticancer, antioxidant, anti-inflammatory, antidiabetic effects and hepatoprotective activities.

Geographical distribution: In tropical and subtropical locales.

Representative Specimen: Chattogram, 24-05-19; TSJ-38 (DUSH)/31 (Cited).

Part use: Seed

Ailments name: Antioxidant, Blood purifier, Cardiac complaints, High blood pressure.

Treatment Mode: Boiled seed paste is taken with boiled rice, Soaked in water overnight and then seed is taken in the morning, Seed is taken, Seed juice is taken with milk. (Cited by Imran, Abdullah, Azad, Rasel, Faruk..).

Plant Name: *Terminalia chebula* Retz. Obs. Bot. 5: 31 (1788) (Combretaceae).

Synonym: *Terminalia parviflora* Thwaites (1854), *Terminalia zeylanica* van Heurck & Müll.-Arg. (1870).

Local Name: Horitaki

Description: A medium to large deciduous tree, usually with drooping branches, bark rough, dark brown or grey or almost black. Wood dark purple. Leaves broadly oblong or oblong- elliptic, margin entire, silky when young. Flowers dull-white to yellowish. Fruit a drupe, subglobose, ellipsoid or obovoid, glabrous, greenish- yellow. Seed solitary and lanceolate.

Flowering and fruiting: April-October.

Ecology: Moist deciduous to evergreen forest.

Economic value: Chebulic corrosive is a phenolic acid compound segregated from the ripe fruits. Luteic acid can be isolated from the bark. *Terminalia chebula* contains terflavin B, a sort of tannin, while chebulinic acid is found in the fruits. It is good to increase stomachic, liver stimulant, chronic diarrhea, gastrointestinal prokinetic agent and mild laxative.

Geographical distribution: Tropical areas of the world.

Representative Specimen: Chattogram, 24-05-19; TSJ-6 (DUSH)/166 (Cited).

Part use: Fruit

Ailments name: Blood purifier, Cardiac complaints, High blood pressure.

Treatment Mode: Soaked in water overnight and then water is taken in the morning, Dried fruit powder mixed with Amloki and Bohera powder in water and drink the mixture in empty stomach, Decocted with water and then drunk the water. (Cited by Tasnim, Amzad, Nizam, Atik, Imran..).

Plant Name: *Thevetia peruviana* (Pers.) K. Sehum. Engl. And Prantl, Nat. Plant family 4 (2): 159 (1895) (Apocynaceae).

Synonym: *Cerberus peruviana* Pers. (1805), *Thevetia nereifolia* Juss. of. Steud. (1841), *Cascabela thevetia* (L.) Lippold (1980)

Local name: Kolke

Description: Shrub or small tree, glabrous branches, up to 8 m high. Leaves spirally arranged, linear-lanceolate, simple. Inflorescence, cymose, subterminal, few-flowered. Flowers 5-merous, sepals acute, corolla lobes, infundibuliform, wide tube. Seedling with epigeal germination. Seed flattened with a small wing.

Flowering and fruiting: Around the year.

Ecology: Evergreen lowland or from 50-200 m altitude.

Economic value: Bark was taken to cure amenorrhoea. The active principles are cardiac glycosides is cardenolide type. It is a local source of cardiac glycoside. Seeds are used as dropsy and a purgative in rheumatism.

Geographic distribution: Tropical America and is distributed in Southeast Asia as an ornamental plant.

Representative example: Savar, 21-11-19; TSJ- 94 (DUSH)/17 (Cited).

Part use: Root

Ailments name: Cardiac complaints

Treatment Mode: 1gram root powder is taken with boiled milk. (Cited by Shamim, Faruk, Haerun).

Plant Name: *Tinospora crispa* (L.) Schlinge. F. and Thoms., Fl. Ind. 1: 183 (1855).

Synonym: *Menispermum crispum* L. (1763), *Menispermum tuberculatum* Lamk. (1797).

Local name: Guloncholota

Description: A large woody climber, completely hairless. Tuberculous or warty stem. Male inflorescence not appearing with the leaves. Female inflorescence short.

Flowering and fruiting : January to June.

Ecology: Evergreen forests.

Economic value: Chemical structures of flavone glycosides, isolated from *Tinospora crispa*. It revealed the presence of alkaloids, cis clerodane-type furanoditerpenoids, flavonoids, flavone glycosides, triterpenes, diterpene glycosides, lactones, sterols, lignans, and nucleosides. It is used for treating rheumatism, jaundice, fever, urinary disorders, diabetes, malaria, fracture, internal inflammation, reducing thirst, hypertension, cooling down, good health and body temperature.

Geographic distribution: India, Bangladesh, Myanmar, Cambodia, Vietnam, South China, Thailand, Malaysian Peninsula.

Representative Specimen: Savar, 21-11-19; TSJ-95 (DUSH)/32 (Cited).

Part use: Leaves

Ailments name: Blood purifier

Treatment Mode: 10-12 g of leaf powder is taken with a cup of water for 30 days. (Cited by Reshma, Elias, Azad).

Plant Name: *Trichosanthes dioica* Roxb., Fl. Ind. 3: 701 (1831) (Cucurbitaceae).

Local Name: Potol

Description: Climbing plant with heart-shaped leaves and grown on a trellis. The fruits are green with white stripes or no stripes, and sizes is 2-6 inches long.

Flowering and fruiting: February - September.

Ecology: Well-drained, loamy soil, susceptibility to waterlogging.

Economic value: Pointed gourd is a decent wellspring of nutrients and minerals. It is a good source of carbohydrates, vitamin A, C, magnesium, potassium, copper, sulfur. Plant leaves are used as antipyretic, diuretic, cardi tonic, antiulcer, etc.

Geographical distribution: Annual or perennial herb, disseminated in tropical Asia and Australia.

Representative Specimen: Savar, 21-11-19; TSJ- 96 (DUSH)/80 (Cited).

Part used: Seed, Fruit

Ailments name: Antioxidant, Blood purifier, Cardiac complaints.

Treatment Mode: Seed paste is taken with boiled rice, Boiled fruit paste is taken with boiled rice, Fruit is taken as vegetable. (Cited by Sharmin, Zahedul, Sazib, Uzzol..).

Plant Name: *Trigonella- foenum-graecum* L. Sp. pl.: 777 (1753) (Fabaceae).

Local Name: Methi

Description: Erect, stiff, strongly fragrant annual herb up to 60 cm tall. Stem solitary or basally branched. Leaves trifoliolate; stipules triangular, alternate, small, adnate to the petiole. Flowers solitary, axillary, subsessile, 12-15 mm long. Straight fruits sometimes sickle-shaped. Oblongromboidal seed Plants with epigeal germination.

Flowering and fruiting: Around the year.

Ecology: Well-drained fertile loams or sandy loams. It is suitable for moderate or low rainfall and also sun-loving crop.

Economic value: Seeds contain water, protein, fat, carbohydrates, fibre, ash, β -carotene, thiamine, riboflavin, niacin and tryptophan. Fresh leaves contain water, protein, fat, carbohydrates, fibre and ash. It presents lysine but low amount of sulphur-containing amino acids.

Geographical distribution: It is native to the Western Asia, Mediterranean, and India.

Representative Specimen: Savar, 21-11-19; TSJ- 97 (DUSH)/32 (Cited).

Part used: Seed, leaves

Ailments name: Antioxidant, Blood purifier, Cardiac complaints, High blood pressure.

Treatment Mode: Leaf is taken as vegetable, Soaked in water overnight and then water is taken in the morning, Seed paste is taken with boiled rice, Seed powder is taken with water. (Cited by Helal, Israt, Shorna, Alvi, Saleha, Rasel..).

Plant Name: *Triticum aestivum* L., Sp. Pl. ed. 1,1: 85 (1753) (Poaceae)

Synonym: *Triticum hybernum* L. (1753), *Triticum compositum* L. (1774).

Local Name: Gom

Description: Annual grass, erect, simple, glabrous, up to 1.2 m tall, leaves flat, narrow, spikes, slender, compressed, hexaploid, slightly overlapping, nearly erect, spikelets are 2–5-flowered, pressed close to rachis, firm, and glabrous.

Flowering and fruiting: August to September.

Ecology: Hot and humid conditions are unfavorable to the cultivation of wheat.

Economic value: The medicinal component of *Triticum aestivum* are vitamins A, C and E, bioflavonoids, minerals, iron, calcium, magnesium and 17 amino acids. There are antioxidant, antihyperlipidemic and anti-diabetic potentials.

Geographical distribution: All over the world.

Representative Specimen: Dhaka, 14-07-19; TSJ-46 (DUSH)/33 (Cited).

Part used: Seed, Leaves.

Ailments name: Blood purifier, Cardiac complaints

Treatment Mode: Boiled seed is taken with milk, Leaf juice is taken in empty stomach. (Cited by Sharifa, Azom, Saif, Piash, Arif..).

Plant Name: *Vigna unguiculata* (L.) Walp. Rep. Bot. Sys. 1: 779 (1842) (Fabaceae).

Synonym: *Dolichos sesquipedalis* L., (1763), *Vigna sesquipedalis* (L.) Fruhw. (1898), *V. sinensis* (L.) Hassk. ssp. *sesquipedalis* (L.) van Eseltine (1931), *V. unguiculata* (L.) Walp. ssp. *sesquipedalis* (L.) Verdc (1970).

Local Name: Borboti

Description: A climbing, glabrous, annual, 2-4 m long, stems twining, more or less square. Inflorescence axillary raceme with several yellowish or pale-blue flowers near the top. Leaves trifoliolate, petiole 5-25 cm long, alternate. Peduncle 17 cm long. Seed elongated, cylindrical to rounded. Seedling with epigeal germination.

Flowering and fruiting: Throughout the year

Ecology: Under full sunlight but tolerate some shade.

Economic value: It contains water, protein, fat, carbohydrates, fibre, ash, Ca, P, Fe, vitamin A, vitamin B₁, vitamin C. Useful in jaundice, anorexia, constipation, menstrual disorders, epilepsy. It has beneficial properties just like anticancer, anti-inflammatory, antihyperlipidemic, antidiabetic and antihypertensive properties.

Geographical distribution: In all South-East Asian nations.

Representative Specimen: Savar, 21-11-19; TSJ- 98 (DUSH)/98 (Cited).

Part use: Fruit

Ailments name: Antioxidant, Chest pain, Cardiac complaints, High blood pressure.

Treatment Mode: Cooked fruit is taken as vegetable, Boiled fruit is taken as salad, Boiled fruit paste is taken with boiled rice. (Cited by Bayezid, Mehedi, Forhad, Mamun, Anisur..).

Plant Name: *Vitis vinifera* L. Sp. Pl.: 202 (1753) (Vitaceae).

Local Name: Angur

Description: Climbing woody vine, 15-20 m or more high. Simple oval leaves, circular or circular in outline. Dense thyrse inflorescences which act as tendrils; fragrant flowers. Fruit a berry, ellipsoid to globose, 6-25 mm long, purplish blue, red, green or yellow, juicy, sweet and sour. 3-4 seeds, pear-shaped.

Flowering and fruiting: September - October.

Ecology: At high latitudes, the principle necessity is a long sufficient developing season with much sun and an adequate warm ripe the berries.

Economic value: Fruit contains water, protein, carbohydrates, fibre, Ca, Fe, P, vitamin A, vitamin B1, B2, C and niacin. It is associated with health benefits as natural antioxidants, resveratrol, flavanol quercetin, catechins, procyanidin, anthocyanins, etc. Grapes are used not only for wine Ripe grapes were taken for the treatment of cancer, skin cholera, smallpox, eye infections as well as kidney and liver diseases.

Geographical distribution: All over the world.

Representative Specimen: Manikganj, Dhaka, 26-08-19; TSJ-108 (DUSH)/82 (Cited).

Part use: Fruit

Ailments name: Antioxidant, Blood purifier, Cardiac complaints.

Treatment Mode: Fruit is taken, Young fruit is taken, Young fruit is preserved as pickles. (Cited by Maruf, Abir, Sajib, Bijoy, Riya..).

Plant Name: *Zea mays* L. Sp. Pl. ed.1, 2: 971 (1753) (Poaceae).

Synonym: *Zea segetalis* Salisb. (1796), *Mayzea cerealis* Raf. (1830).

Local Name: Vutta

Description: Annual grass, robust, monoecious and 14 m tall. Stem generally simple and 1.73 m high. Leaves alternate on both sides of the stem at the level of the nodes and different male and female inflorescences on the same plant.

Flowering and fruiting: Around the year.

Ecology: It is essentially a culture of warm region where the humidity is adequate.

Economic value: It contains water, protein, fat, carbohydrates, fibre and ash. Maize is deficient in tryptophane and lysine. The inner husks and the fibre stems have been used for making paper. The stalks are used for fuel or compost. It is used for bladder infections, congestive heart failure, kidney stones, high blood pressure, and prostate issues.

Geographical distribution: All through the tropical and subtropical areas.

Representative Specimen: Savar, 21-11-19; TSJ-99 (DUSH)/7 (Cited).

Part use: Fruit.

Ailments name: Antioxidant, Blood purifier, Cardiac complaints, High blood pressure.

Treatment Mode: Fried fruit is taken, Seed is taken as popcorn, Boiled seed is taken as vegetable, Dried seed powder is taken with water. (Cited by Pranto, Saif, Azom, Milha, Nurul).

Plant Name: *Zingiber officinale* Rosc., Trans. Linn. Soc. Lond. 8: 348 (1807) (Zingiberaceae).

Synonym: *Amomum zingiber* L. (1753).

Local Name: Ada

Description: Small rhizomatous herb, aromatic, pale yellow inside with pungent taste. Leaves linear-lanceolate, sessile, long acuminate, glabrous or puberulous along midrib beneath, membranous. Corolla tube, creamy-yellow, markedly narrowed at the apex. Filaments creamy-yellow.

Flowering and fruiting: September-November.

Ecology: High lands, sunny conditions, and it benefitted during hot periods, especially when young.

Economic value: Dried ginger rhizomes contain water, protein, fat, carbohydrates, fibre and ash. The essential oil presents terpenes and non-terpenoid compounds they are β -zingiberene, ar-curcumene, α -farnesene, α -zingiberene, β -sesquiphellandrene, and β -bisabolene. The plant has antiarthritis, antibacterial, antifungal, antiinflammatory, antidiabetic, anticancer properties.

Geographical distribution: Throughout the humid tropics.

Representative Specimen: Chattogram, 24-05-19; TSJ-29 (DUSH)/32 (Cited).

Part use: Rhizome

Ailments name: Blood purifier, Chest pain, Cardiac complaints.

Treatment Mode: Rhizome is taken with salt, 2 inch rhizome is boiled with 2 cup of water and the water is taken, Juice is taken with honey. (Cited by Osman, Saleha, Redwan, Alvi, Jahan..).

Plates

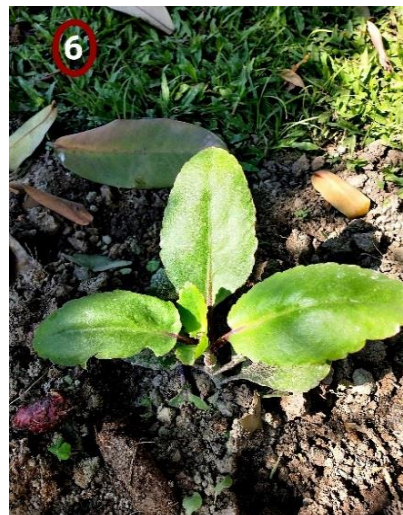
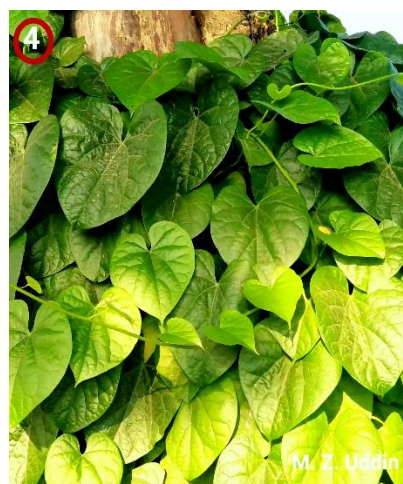


Plate-11. Photographs of some important medicinal plants: 1. *Rosa centifolia* L. (Golap). 2. *Ocimum tenuiflorum* L. (Tulshi). 3. *Achyranthes aspera* L. (Apang). 4. *Tinospora crispa* (L.) Hook. f. & Thoms. (Guloncholota). 5. *Averrhoa carambola* L. (Kamranga). 6. *Kalanchoe pinnata* (Lamk.) Pres. (Pathorkuchi).



Plate-12. Photographs of some important medicinal plants: 7. *Averrhoa bilimbi* L. (Bilombo). 8. *Syzygium cumini* (L.) Skeels. (Jam). 9. *Cocos nucifera* L. (Narikel). 10. *Mangifera indica* L. (Aam). 11. *Artocarpus heterophyllus* Lamk. (Kathal). 12. *Carica papaya* L. (Pepe).



Plate-13: Photographs of some important medicinal plants: 13. *Terminalia catappa* L. (Kath badam). 14. *Lablab purpureous* (L.) Sweet ssp. (Shim). 15. *Acalypha indica* L. (Muktajhuri). 16. *Psidium guajava* L. (Peyara). 17. *Solanum melongena* L. (Begun). 18. *Rauwolfia serpentina* (L.) Benth. ex Kurz. (Swarpagandha).

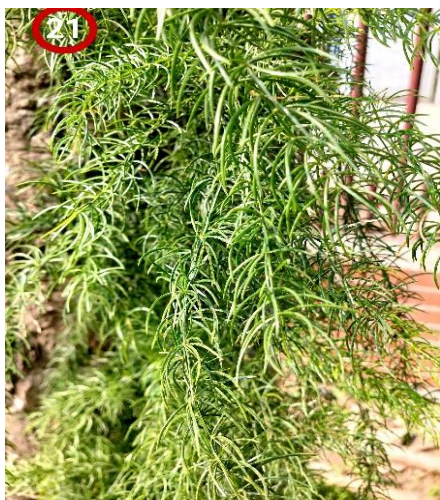


Plate-14: Photographs of some important medicinal plants: 19. *Catharanthus roseus* (L.) G. Don. (Noyontara). 20. *Brassica nigra* (L.) Koch. (Sorisha shak). 21. *Asparagus racemosus* Willd. (Satamuli). 22. *Cynodon dactylon* Pers. (Durba ghash). 23. *Cinnamomum verum* Presl. (Darchini). 24. *Adhatoda zeylanica* Medikus. (Basak)

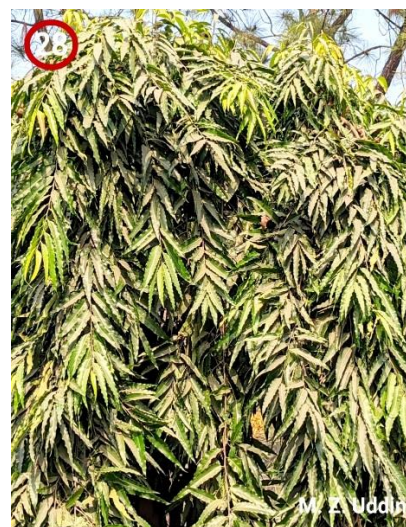


Plate-15: Photographs of some important medicinal plants: 25. *Cuscuta reflexa* Roxb. (Sornalota). 26. *Moringa oleifera* Lamk. (Sajna). 27. *Enhydra fluctuans* Lour. (Helencha). 28. *Polyalthia longifolia* (Sonn.) Thw. (Debdaru). 29. *Tamarindus indica* L. (Tetul). 30. *Murraya koenigii* (L.) Spreng. (Kariyata).



Plate-16: Photographs of some important medicinal plants: 31. *Aegle marmelos* (L.) Corr. (Bel). 32. *Phyllanthus emblica* L. (Amlaki). 33. *Spilanthes oleracea* L. (Ushni shak) 34. *Citrus aurantifolia* (Christm. & Panzer). (Kagojilebu). 35. *Hibiscus rosa-sinensis* L. (Joba). 36. *Musa paradisiaca* L. (Kola).

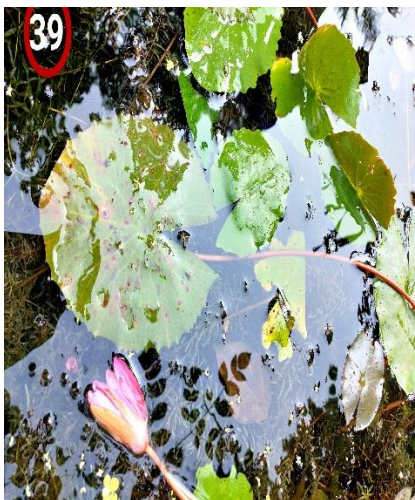


Plate-17: Photographs of some important medicinal plants: 37. *Azadirachta indica* A. Juss. (Neem). 38. *Ipomoea aquatica* Forssk. (Kalmi shak). 39. *Nymphaea nouchali* Burm. F. (Shapla). 40. *Elaeocarpus serratus* L. (Jolpai). 41. *Allium cepa* L. (Piaj). 42. *Curcuma longa* L. (Holud).

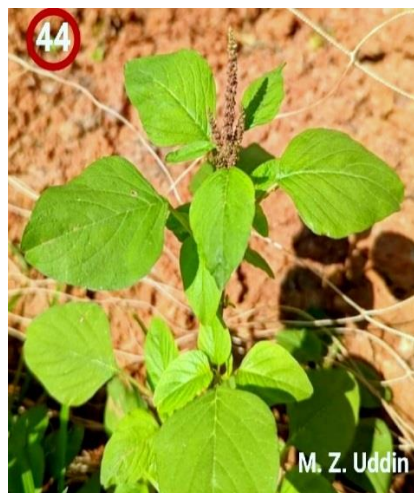


Plate-18: Photographs of some important medicinal plants: 43. *Citrus reticulata* Blanco. (Komola lebu). 44. *Amaranthus viridis* L. (Noteshak). 45. *Oryza sativa* L. (Dhan). 46. *Scoparia dulcis* L. (Chinipata). 47. *Diplazium esculentum* L. (Dheki shak). 48. *Allium sativum* L. (Rosun).

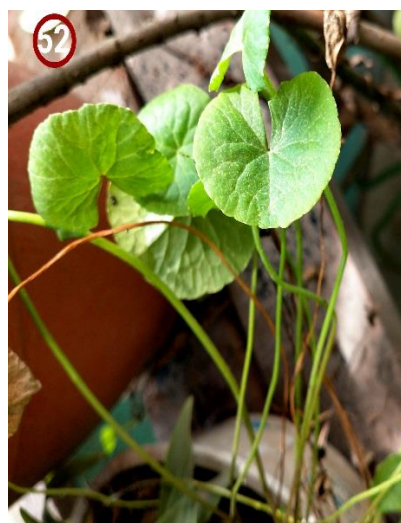
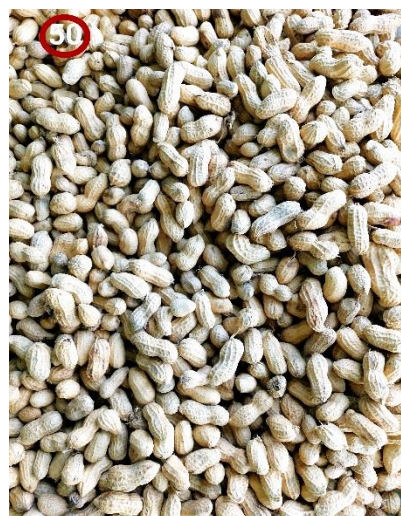


Plate-19: Photographs of some important medicinal plants: 49. *Aloe vera* (L.) Burm. f. (Ghritkumari). 50. *Arachis hypogaea* L. (China badam). 51. *Momordica charantia* L. (Korola). 52. *Centella asiatica* (L.) Urban. (Thankuni). 53. *Basella alba* L. (Puisak). 54. *Mentha spicata* L. (Pudina).



Plate-20: Photographs of some important medicinal plants: 55. *Brassica oleracea* L. (Fulkopi). 56. *Ficus religiosa* L. (Asswath). 57. *Raphanus sativus* (L.) Domin. (Mula). 58. *Cucurbita maxima* Duch, ex Lamk., (Mistikumra). 59. *Thevetia peruviana* (Pers.) K. Seh. (Kolke). 60. *Amaranthus gangeticus* L. (Lalsak).

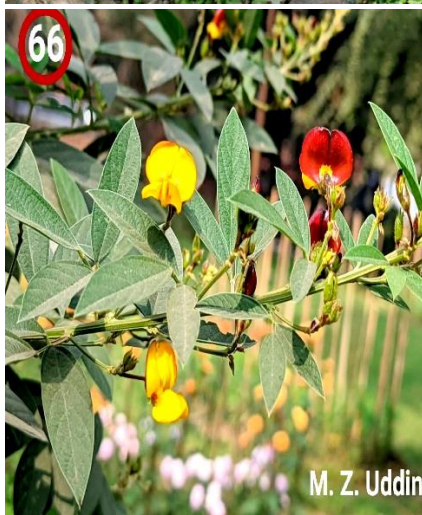
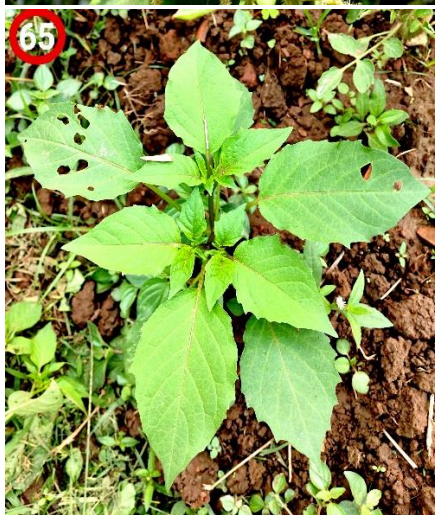
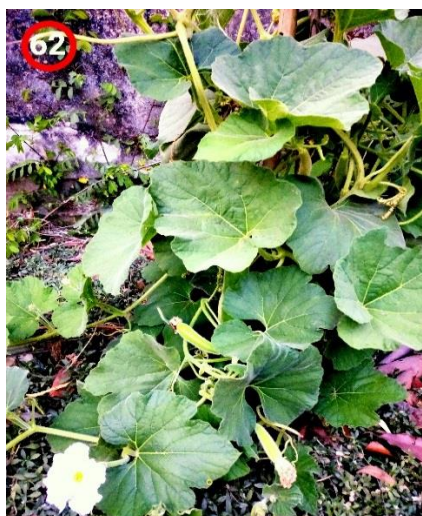


Plate-21: Photographs of some important medicinal plants: 61. *Lycopersicon lycopersicum* (L.) Farewell. (Tomato). 62. *Lagenaria siceraria* (Mol). Stan. (Lau). 63. *Terminalia chebula* Retz. (Horitaki). 64. *Helianthus annuus* L. (Surjomukhi). 65. *Cardiospermum halicacabum* L. (Bontepari). 66. *Cajanus cajan* (L.) Millsp. (Orhor).



Plate-22: Photographs of some important medicinal plants: 67. *Andrographis paniculata* Nees (Kalomegh). 68. *Ficus racemosa* L. (Jogdumur). 69. *Citrus grandis* (L.) Osbeck. (Jambura). 70. *Lawsonia inermis* L. (Mehdi). 71. *Alstonia scholaris* R. Br. (Chatim). 72. *Abroma augusta* (L.) L. f. (Ulatkambol).

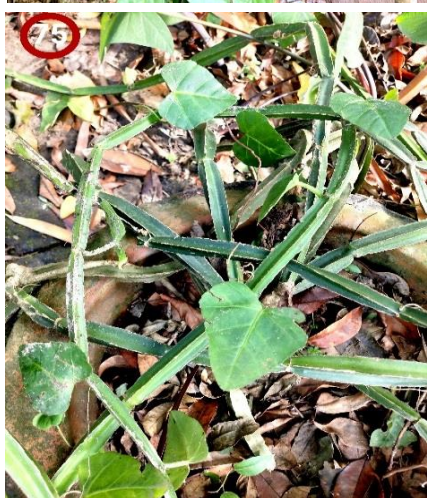
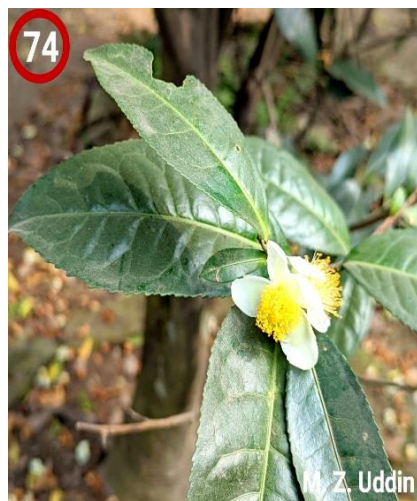


Plate-23: Photographs of some important medicinal plants: 73. *Baccaurea ramiflora* Lour. (Lotkon). 74. *Camellia sinensis* (L.) O. Kuntze (Tea). 75. *Cissus quadrangularis* L. (Harjora). 76. *Terminalia bellirica* (Gaertn.) Roxb. (Bohera). 77. *Terminalia arjuna* (Roxb. Ex DC.) Wight & Arn. (Arjun). 78. *Nyctanthes arbor-tristis* L. (Shiuli).

Evaluation of Thrombolytic Activity

3.2 Evaluation of Thrombolytic Activity

Introduction

In the circulatory system, a blood clot (thrombus) developed because of the failure of hemostasis causes vascular blockage and at the same time as recovering leads to serious consequences in atherothrombotic illnesses consisting of acute myocardial or cerebral infarction, at times leading to death. Cerebral venous sinus thrombosis (CVST) is a typical problem with severe suffering and death (Watson *et al.*, 2002). Commonly used thrombolytic agents are alteplase, anistreplase, streptokinase, urokinase, and tissue plasminogen activator (TPA) to dissolve clots (Collen *et al.*, 1990). Several different assay procedures were developed, but the in vitro model involving streptokinase as standard showed superior consistency in the outcome of the test (Prasad *et al.*, 2006). Herbal supplements have been used to treat some infections since ancient times. The roots, as well as the branches, stems, bark, and pieces of underground plants, are often used for traditional medicine. Herbs are realized as safe because they are "natural" (Gesler, 1992). The present study aimed to investigate the thrombolytic activity of crude methanolic extract of *Allium cepa* L. (Leaf), *Ipomoea aquatica* Forssk. (Leaf) and *Cinnamomum tamala* Nees & Eberm. (Leaf).

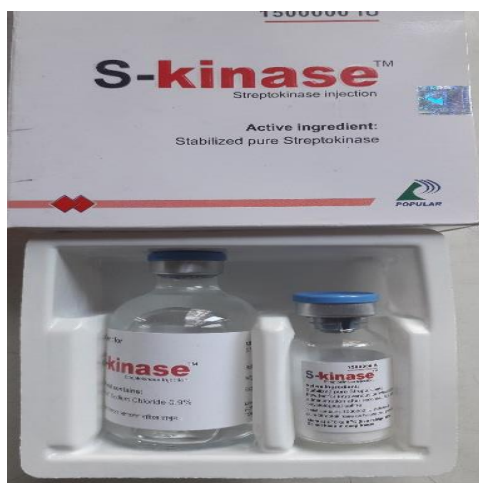
3.2.2 Materials and Methods

3.2.2.1 Materials

Plant materials	Eppendorf tubes / micro centrifuge tubes	Blood Sample
Micropipette	Micropipette tips	Distilled water
Syringe	Conical flasks	Streptokinase (SK)
Round bottomed flasks	Spatula	Methanol
Foiling paper	Filter paper (Double ring)	
Vials	Electronic balancer	
Vortex mixer	Incubator	
Centrifuge machine	Drying oven	
Grinding machine	Cotton	

3.2.2.2 Streptokinase (SK):

The commercially available lyophilized streptokinase (SK) (S-kinase, Popular Pharmaceuticals Ltd., Bangladesh) of 1500000 I.U per vial was used as a positive control. Then 5 ml of sterile distilled water was added to the streptokinase vial and mixed the suspension properly. This suspension was used as a stock from which 100 μ l (30000 I.U) was used for in vitro thrombolysis.



Streptokinase (SK)



Micropipette



Vials



Eppendorf tubes



Vortex mixer



Drying oven



Electronic balancer



Incubator



Grinding machine



Centrifuge machine

Plate-24: Photographs of some apparatus and reagents used in the test.

3.2.2.3 Collection and identification of the plant materials:

The three most common medicinal plants used to treat cardiovascular diseases as claimed by the local informants are *Allium cepa* L, *Cinnamomum tamala* Nees & Eberm, and *Ipomoea aquatica* Forssk. Then the leaf of *A. cepa* L, *C. tamala* Nees & Eberm, and *I. aquatica* Forssk were collected from the Dhaka local market and identified as described in Chapter: 2.

3.2.2.4 Preparation of plant materials:

After collection, the leaves of the plants were washed with clean water for removing dirt. After being properly washed the leaves were cut into small pieces and then dried in the sun for several days. These materials were then ground into a powder using a high-performance grinder and stored in a closed container at room temperature for further analysis for the experiment.

3.2.2.5 Extraction of plant materials:

The plant materials (100 g powder sample of each species) were placed in three clean conical flasks and soaked in 300 ml of 70% methanol. The containers and their contents were sealed with aluminum foil and stored for 5 days with occasional stirring and shaking. The entire mixture was then filtered with Whatman filter paper. Then the filtered extracts were collected and dried at low temperature using rotary evaporator to prepare the crude extracts.

3.2.2.6 Plant extracts preparation:

The thrombolytic activity of all plant extracts were evaluated with a method using streptokinase (SK) as a reference standard (Ali *et al.*, 2014). First, 100 mg of crude extracts from each plant was suspended in 10 ml of 70% ethanol and the suspension was vigorously stirred with a vortex mixer. The suspension was then stored overnight and decanted to remove soluble supernatant which was filtered through Whatman filter paper. Subsequently, this preparation of each plant sample was added to the microcentrifuge tubes containing the clots to monitor the thrombolytic activity.

1. *Allium cepa* L.2. *Ipomoea aquatica* Forssk.3. *Cinnamomum tamala* Nees & Eberm.4. *Allium cepa* L5. *Ipomoea aquatica* Forssk6. *Cinnamomum tamala* Nees & Eberm

7. Sun dried,

8. Oven dried,

9. Grinded sample.

Plate-25: Collection and preparation of plant materials: 1. *Allium cepa* L., 2. *Ipomoea aquatica* Forssk., 3. *Cinnamomum tamala* Nees & Eberm. (Raw materials), 4. *Allium cepa* L., 5. *Ipomoea aquatica* Forssk., 6. *Cinnamomum tamala* Nees & Eberm. (Dried pieces of plant materials), 7. Sun dried, 8. Oven dried, 9. Grinded sample.

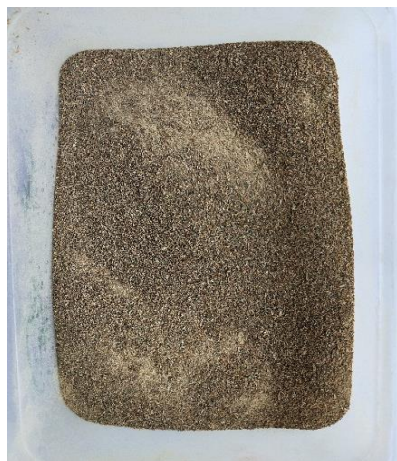
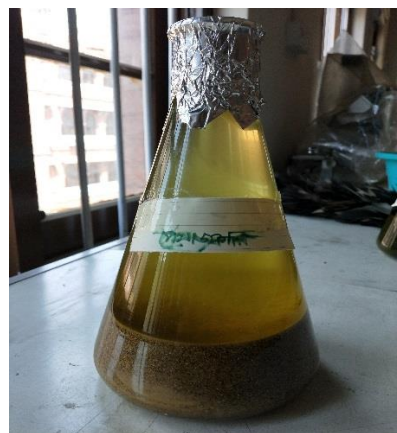
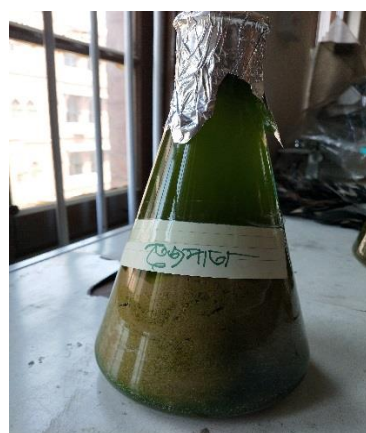
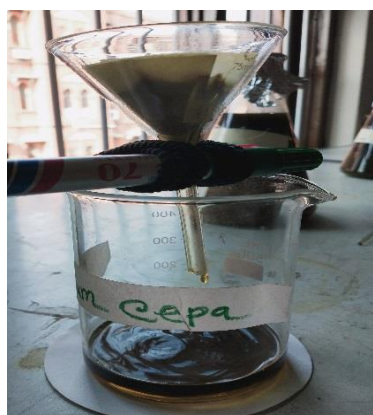
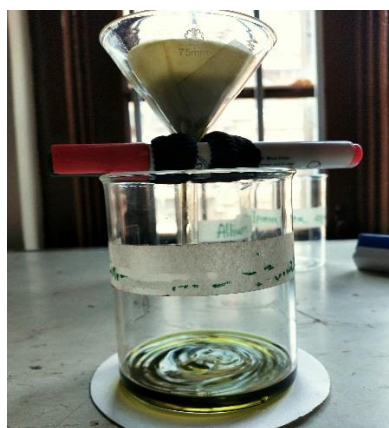
a. *Allium cepa* Lb. *Ipomoea aquatica* Forsskc. *Cinnamomum tamala* Nees & Ebermd. *Allium cepa* Le. *Ipomoea aquatica* Forsskf. *Cinnamomum tamala* Nees & Ebermg. *Allium cepa* Lh. *Ipomoea aquatica* Forsski. *Cinnamomum tamala* Nees & Eberm

Plate-26: Crude extracts preparation: a. *Allium cepa* L., b. *Ipomoea aquatica* Forssk., c. *Cinnamomum tamala* Nees & Eberm. (Powdered sample). d. *Allium cepa* L., e. *Ipomoea aquatica* Forssk., f. *Cinnamomum tamala* Nees & Eberm., (Samples mixed with 70% Ethanol). g. *Allium cepa* L., h. *Ipomoea aquatica* Forssk., i. *Cinnamomum tamala* Nees & Eberm. (Filtering plant samples).



j. *Allium cepa* L.



k. *Ipomoea aquatica* Forssk.



l. *Cinnamomum tamala* Nees & Eberm.



m. Air drying



n. *Allium cepa* L.



o. *Ipomoea aquatica* Forssk.



p. *Cinnamomum tamala* Nees & Eberm.

Plate-27: Crude extracts preparation. **j.** *Allium cepa* L., **k.** *Ipomoea aquatica* Forssk., **l.** *Cinnamomum tamala* Nees & Eberm., **m.** Air drying (Air drying to make crude extract). **n.** *Allium cepa* L., **o.** *Ipomoea aquatica* Forssk., **p.** *Cinnamomum tamala* Nees & Eberm., (Crude extracts).

3.2.2.7 Collection of blood sample:

Venous blood was drawn from healthy human volunteers (n = 5) regardless of sex while maintaining an aseptic condition. The blood samples were then immediately transferred to pre-labeled, heavy sterile microcentrifuge tubes (0.5 ml in each centrifuge tube) to form clots.

3.2.2.8 *In vitro* thrombolytic activity:

Thrombolytic activity with respect to *in vitro* clot lysis was determined as previously reported (Prasad *et al.*, 2006, Ali *et al.*, 2014).

3.2.2.9 Preparation of clots:

First, the microcentrifuge tubes along with the blood samples were centrifuged at 2000 rpm for 5 minutes so that the serum could be separated by easy removal from the centrifuge tube. The centrifuge tubes were then placed at simulated body temperature; i.e. at 37°C for 45 min in heat controlled incubator.

3.2.2.10 Clot lysis:

Aliquots (5 ml) of venous blood were taken from healthy volunteers, which were distributed into five different pre-weighed sterile microcentrifuge tubes (1 ml/tube) and incubated for 45 minutes at 37° C. After formation of the clot, the serum was completely removed without disturbing the clot and each microcentrifuge tube having clot was again weighed to determine the clot weight: Then weight of clotted blood (ΔW) was taken by subtracting the pre-weighed (W_1) from the weight of clot containing tube (W_2) as, $\Delta W = W_2 - W_1$ (Zaman *et al.*, 2015). The equation for calculating clot weight is as following:

$$\text{Clot weight} = \text{weight of clot containing tube} - \text{weight of empty tube}$$

In each microcentrifuge tube containing a pre-weighed clot, 100 μ l of aqueous solutions of different distributions were added separately with the crude extract. As a positive control, 100 μ l of streptokinase (SK) stock solution and as a non-thrombolytic negative control, 100 μ l of distilled water was added separately to the control tubes. All tubes were then incubated for 90 minutes at 37° C and observed for clot lysis. After incubation, the released liquid was removed and the tubes reweighed to observe the difference in weight after the clot was ruptured. The difference in weight measured before and after clot lysis was expressed as a percentage of clot lysis as shown below:

$$\% \text{ of clot lysis} = \left(\frac{W_2 - W_3}{W_2 - W_1} \right) \times 100$$



Plate-28: *In vitro* thrombolytic activity

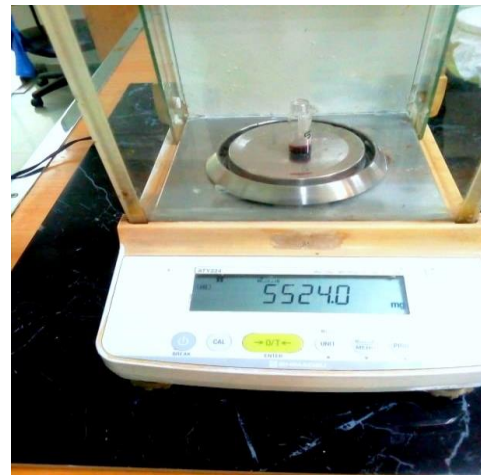


Plate-29: *In vitro* thrombolytic activity

3.2.3 Results

A. cepa, *I. aquatica* and *C. tamala* showed thrombolytic activity which was determined as part of a new probe of cardioprotective drugs from medicinal plants. It showed that the addition of 100 μ l of streptokinase stock solution as a positive thrombolytic control (30000 I.U) to blood clots with 90 min incubation at 37°C showed 68.79 % of clot lysis. On the other hand, distilled water was treated as negative non thrombolytic control which exhibited negligible percentages of lysis of clot 2.04 %. The mean difference in clot lysis percentages between positive and negative control was found statistically significant. Among the plants, *A. cepa* (leaf) showed 22.24 % lysis of the clot, (Table:12). *C. tamala* (leaf) showed 58.99 % lysis of clot lysis (Table:13). *I. aquatica* (leaf) showed 28.96 % lysis of the clot. (Table:14). Of the three plants *C. tamala* showed the highest thrombolytic activity for clot lysis rather than *I. aquatica* and *A. cepa* plants.

Table-12: Thrombolytic activity of (in terms of % of clot lysis) leaf of *Allium cepa* L (Piaj)

Fractions name	W ₁	W ₂	W ₃	W ₄ =W ₂ -W ₁	W ₅ =W ₂ -W ₃	% of clot lysis (w ₅ /w ₄)x100
ME	5173.4	5812.3	5670.2	638.9	142.1	22.24
Blank	5293.4	5907.6	5895.1	614.2	12.5	2.04
SK	5038.7	5573.7	5205.7	535	368	68.79

ME= Methanol crude extract, SK: Streptokinase

Table-13: Thrombolytic activity of (in terms of % of clot lysis) leaf of *Cinnamomum tamala* Nees & Eberm. (Tejpata).

Fractions name	W ₁	W ₂	W ₃	W ₄ =W ₂ -W ₁	W ₅ =W ₂ -W ₃	% of clot lysis (w ₅ /w ₄)x100
ME	5012.2	5470.2	5200	458	270.2	58.99
Blank	5293.4	5907.6	5895.1	614.2	12.5	2.04
SK	5038.7	5573.7	5205.7	535	368	68.79

ME= Methanol crude extract, SK: Streptokinase

Table-14: Thrombolytic activity of (in terms of % of clot lysis) leaf of *Ipomoea aquatica* Forssk. (Kalmi shak)

Fractions name	W ₁	W ₂	W ₃	W ₄ =W ₂ -W ₁	W ₅ =W ₂ -W ₃	% of clot lysis (w ₅ /w ₄)x100
ME	4804	5063	4988	259	75	28.96
Blank	5293.4	5907.6	5895.1	614.2	12.5	2.04
SK	5038.7	5573.7	5205.7	535	368	68.79

ME= Methanol crude extract, SK: Streptokinase

Here,

W₁ = Weight of vial alone;

W₂ = Weight of clot containing vial;

W₃ = Weight of clot containing vial after clot disruption;

SK = Streptokinase.

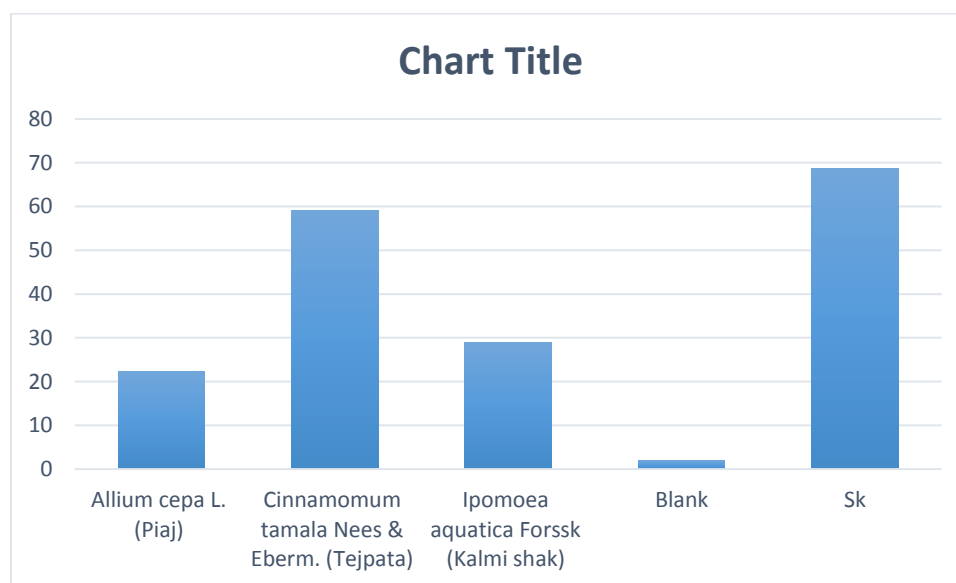


Figure-9: Comparative thrombolytic activity of *Cinnamomum tamala* Nees & Eberm. (Tejpata) *Allium cepa* L. (Piaj) and *Ipomoea aquatica* Forssk (Kalmi shak) for plant extract and streptokinase.

Discussion

4.1. Discussion:

4.1.1 Investigation on Ethnobotanical survey focusing on Cardiovascular diseases:

Ethnobotanical knowledge is an important source of traditional medicine used against various diseases. The use of medicinal herbs has long been a human practice, and traditional knowledge is passed down from generation to generation. Ethnomedical research aims to document the practice of using medicinal plants in local communities.

In the current study in Chattogram and Dhaka division, medicinal plants were reported through semi-structured interviews and discussions with key informants. As a result of the research, 131 medicinal plants belonging to 61 families were registered, which were obtained during 300 interviews concerning the arrangement of cardiovascular diseases. These data indicate that the study area is abundant in medicinal plants with various health applications.

Among informants, the percentage of the male informant was higher than that of women. Professionally, huge varieties have been found such as farmers, housewives, day laborers, businessmen, traders, teachers, civil servants, etc. Among the plant parts, leaves have been the maximum generally applied plant component for the preparation of ethnomedicine followed via way of means of fruit, root, seed, stem, bark, rhizome, latex, flower and whole plant. It has been mentioned that the usage of leaves is higher for the survival of medicinal plants collected by herbalists as compared to the whole plant, roots, bark, rhizome, latex, flower and stem, which may reason intense risk to local flora (Zheng 2009).

From the acquired results, it regarded that most number of species under 61 families for the remedy of numerous sicknesses. Fabaceae turned into the maximum commonly used family for medicinal purposes followed by Amaranthaceae, Asteraceae, Cucurbitaceae and Apocynaceae. Evidence from different literature indicates that Asteraceae, Fabaceae, Solanaceae possess an extensive variety of bioactive compounds that have been using of to deal with numerous sicknesses that support the selection of plants from these families through local people (Ivancheva and Stantcheva 2000).

The maximum generally referred to the mode of practice turned into juice via way of means of the local of the study area. There have been many different modes of practice of drugs consisting of paste, crushed, decoction, cooked. Maximum local people have been orally administrated or

internal. The outcomes have been about Uddin *et al.*, 2017, Uddin *et al.*, 2015 who discovered the identical from different parts of Bangladesh.

Calculating the Factor of informant consensus (Fic) values total ailments were categorized into five groups just as Cardiac complaints, Blood purifier, Chest pain, High blood pressure and Antioxidant. Species used for this purpose were *Phyllanthus emblica* L., *Allium sativum* L., *Terminalia arjuna* (Roxb. Ex DC.) Wight & Arn., *Achyranthes aspera* L., *Terminalia chebula* Retz, *Allium cepa* L. The average Fic value for all ailment categories obtained was the highest. Such value indicated that the maximum number of people in the study area were well informed about the medicinal knowledge of plants. Among the five categories, the Cardiac complaints group attained the highest Fic values followed by Blood purifier, Chest pain, High blood pressure and Antioxidant.

The medicinal plant species which have been importantly used by the peoples of the locality had excessive Fidelity Level (Fl) than the ones which have been less vital. For figuring out medicinally vital plant species of the study place Fidelity Level (Fl) was calculated. In general, the high (Fl) of a species suggests the superiority of a particular disorder in a place and the usage of plant species through the population to deal with it (Bibi *et al.*, 2014, Srithi *et al.*, 2009). Among the 131 plant species, with 114 formularies, 45 scored Fl values of 100%. The Fidelity level of the most cited plant species turned into categorized. Among the medicinal plants some threatened plants were identified, including *Achyranthes aspera* L., *Cajanus cajan* (L.) Millsp., *Andrographis paniculata* Nees., *Aquilaria malaccensis* Lam., *Dioscorea alata* L., and *Rauvolfia serpentina* (L.) Benth. ex Kurz.

According to the citation frequency of all medicinal plants, the most frequently used plants were *Phyllanthus emblica* L., *Allium sativum* L., *Terminalia arjuna* (Roxb. Ex DC.) Wight & Arn., *Achyranthes aspera* L. and *Terminalia chebula* Retz. The highest Cf value means that such species are very significant plant species in the study and used for the treatment of heart disease. These species are also known to be important medicinal plants in our country. *Allium sativum* L. was used for coronary heart disease. This plant was also used for cold, fever, gastric, chest pain, reduced pressure, ringworm (Uddin *et al.*, 2017, Uddin *et al.*, 2015).

The present analysis also confirmed the popularity of the drugs among the local population in and around Dhaka and Chattogram division. Herbal remedies that have achieved the highest consensus

on the basis of Fic, Fl, and Cf values can be used to select potential herbal species for further pharmacological studies and drug development recommendations.

Since the dawn of society, humans have relied on plants to create new fields for the discovery of drugs derived from plants. These medicines are effective in curing several ailments and have changed the focus on herbal medicines in new ways. It is estimated that about 30% of pharmaceutical products are made from plant derivatives (Leta *et al.*, 2002, Gillman *et al.*, 1995). Several studies have been conducted to find plants and natural food sources and their supplements that have antithrombotic effects such as anticoagulant and antiplatelet. There are indications that consumption of these foods leads to the prevention of coronary disease and stroke (Ratnasooriya *et al.*, 2008, Liu *et al.*, 2000., Joshipura *et al.*, 1999., Bazzano *et al.*, 2002). Although there are several thrombolytic drugs with those obtained with recombinant DNA technology, the side effects associated with some of these drugs have been reported to cause further difficulties (Baruah *et al.*, 2006, Wardlaw *et al.*, 2004, Gallus *et al.*, 1998, Capstick *et al.*, 2005). However, herbal preparations with the right dosage can be an alternative and a better choice for curing various type diseases.

The record of 131 ethnomedicinal plant species with diverse use patterns reflected the traditional knowledge richness in the study area. Among the ethnomedicinal plants, 10 plant species including *Phyllanthus emblica* L., *Allium sativum* L, *Terminalia arjuna* (Roxb. Ex DC.) Wight & Arn, *Achyranthes aspera* L, *Terminalia chebula* Retz., *Allium cepa* L, *Adhatoda zeylanica* Nees, *Cinnamomum tamala* Nees & Eberm, *Cajanus cajan* (L.) Millsp, *Ipomoea aquatic* Forssk, were cited maximum times by the local people. These species had been used frequently in the study area for primary healthcare also. Among the ten plant species, local use of three species named *Allium cepa* L, *Cinnamomum tamala* Nees & Eberm, and *Ipomoea aquatica* Forssk had been studied because of identifying the effectiveness in chronic diseases. Streptokinase (SK), a known thrombolytic drug was used as a positive control (Prasad *et al.*, 2007). Methanol, on the other hand, was established as a negative thrombolytic control. Comparison of positive thrombolytic control with negative thrombolytic control confirmed that clot dissolution did not occur when methanol was added to the clot. When comparing these positive and negative controls, significant thrombolytic activity was observed after clot treatment with the leaf of *Allium cepa* L, *Cinnamomum tamala* Nees & Eberm, and *Ipomoea aquatica* Forssk.

Allium cepa L. peels had been extracted with the aid of using ethanol, warm water, and subcritical water (SW) extraction and their antioxidant activities had been evaluated (Ah lee *et al.*, 2014). *Allium cepa* L. showed significant antithrombotic activity both in vitro and in vivo. It showed thrombolytic activity in addition to the antiplatelet effect. The richest flavonoid in onion was measured. *A. cepa* can be classified into varieties with antithrombotic and thrombolytic effects (Yamada *et al.*, 2004). *Allium cepa* L has antioxidant and enzyme inhibitory activities. The methanol and ethanol showed the highest antioxidant activities, followed by ethyl-acetate, chloroform, and n-hexane extracts. Among the flavonols possessed higher antioxidant activities (Nile *et al.*, 2017). It is suggested that the methanolic extract of *Allium cepa* L. (onion) attenuates ischemia/hypoxia-induced apoptosis in heart-derived cells (Park *et al.*, 2009).

Cinnamomum tamala leaves are aromatic, diuretic, carminative, stimulant, lactagogue, diaphoretic and deobstruent. Other parts of the plant are also used as traditional remedies for various diseases (Rahman *et al.*, 2013). The study was conducted for the characterization of evaluation of cytotoxic, possible chemical groups, antibacterial and anthelmintic activities of crude methanolic extract of leaves of *Cinnamomum tamala*. The study revealed that the presence of alkaloids, tannin, amino acids, reducing sugar and steroid in the crude extract of *Cinnamomum tamala* (Ahmed *et al.*, 2013).

Ipomoea aquatica Forssk has the antioxidant and antiproliferative activities of 95% ethanol or water extract (Huang *et al.*, 2004). *I. aquatica* has been used in people's medicinal drugs towards special illnesses together with diabetes, hypertension, liver malfunction, constipation, and in the remedy of opium and arsenic poisoning (Dewanjee *et al.*, 2015). *Ipomoea aquatica* has a few quantities of antioxidant capacity and it is relatively secure for the functions applied in particular as newly found food and the study have been required to isolate the lively components that are chargeable for the antioxidant capability and membrane-stabilizing interest of water spinach (James *et al.*, 2009). It has a capacity for hypolipidemic interest, which gives pharmacological evidence for people's use of liver diseases (Sivaraman *et al.*, 2010).

Thus, those plants scientifically validated the ethnobotanical uses found in them in the study area and will be a source of drug discovery for cardiovascular diseases. Further long-time research is needed to validate the ethnomedicinal plants utilized by the local people for the management of cardiovascular diseases in Bangladesh.

4.2. Threats to medicinal plants:

Biodiversity is depleting at an alarming rate globally due to human interferences together with environmental degradation, ensuing in an excessive hazard of extinction. Human effect on nature and herbal sources has reached this sort of excessive percentage that the world is these days witnessing a unique charge of species loss. Many more species are disappearing from nature earlier than their discovery and determination. (Rashid *et al.*, 2013).

During field observations and discussions with the local community, numerous threats to medicinal plants were identified. Lack of awareness amongst the local community at the significance of medicinal plants is the principle risk to medicinal plants. The most serious threats are special wood species plantation in and across the homestead, fallow lands, roadsides, or even cultivated lands. Among the medicinal plants four threatened plants were identified, such as *Andrographis paniculata* Nees, *Aquilaria malaccensis* Lam., *Dioscorea alata* L., and *Rauvolfia serpentina* (L.) Benth. *ex* Kurz.,

Deforestation, habitat loss, civilization, speedy urbanization, and excessive family location are considered the main threats to medicinal plants. Various improvement projects, modernization, and industrialization are in large part liable for destroying the biodiversity in conjunction with the herbal habitat of those species in addition to their traditional knowledge. Brick build, use of extra fertilizer, pesticides, and herbicides, use of modern agricultural techniques, river erosion is likewise possessed great threats to the habitats of medicinal vegetation withinside the study area. Obtainability of the allopathic drugs which promote the negligence of natural drugs amongst the area people withinside the study area is also taken into consideration as a threat to medicinal plants. Adult humans with the knowledge of natural remedies do not share their knowledge with others. So with the demise of such humans, natural knowledge from the area was lost forever. About nearby humans, such even is taken into consideration as a top-notch threat to the traditional use of medicinal plants.



Excessive dark smoke from Brick field (Dhaka)



House in the middle of the cultivated field (Savar)



Construction work polluting nature and habitat (Chattogram)



Exotic species plantation (Manikganj)

Plate-30; Photographs of some disturbances in nature.

4.3. Suggestions for the conservation of culturally important medicinal plants:

Conservation biology is dealing with nature and Earth's biodiversity to protect species, their habitats, and ecosystems from excessive costs of extinction and the erosion of biotic interactions. In the existing study, we attempted to preserve the statistics approximately the crucial medicinal plant species, their makes use of, plant species used for cardiovascular sickness, and elements responsible for the extinction. This present survey is the documentation on ethnobotanical makes use of 131 medicinal plants with 114 formularies for cardiovascular sickness used by the local people in and across the Dhaka and Chattogram division. The statistics gathered from the observed location uncovered tremendous variants in plant elements used, mode of application, and its usage as mentioned from different areas. Some suggestions had been made based on present survey effects. Awareness programs amongst the local people who could make alternate and students of various educational institutions should be created. Mass media additionally should make the right steps in this regard. Training of the younger technology at the use and conservation of those medicinal plants could be very necessary. Group discussions should be made in different places to create awareness amongst the area people about medicinal plants conservation. The local people

play important roles in the conservation of medicinally used knowledge and the most often utilized plants should be taken under extraordinary conservation programs. In addition, the maximum typically used types of medicinal plants ought to be taken below a unique cultivation program. Conservation techniques should be followed primarily to preserve the precious herbal assets withinside the location. Conservation tasks together with in situ or ex situ conservation activities must be carried out earlier than those medicinal plant assets are lost forever. Various institutions or NGOs (non-governmental organizations) also can play a role in the awareness-raising process. The effects of this survey will play an important position for us in number one fitness care and can be beneficial in further ethnobotanical studies.

Conclusion

5. Conclusion:

The study had resulted in recording a total of 131 ethnomedicinal plant species under 61 families with 114 formularies was documented by the local people around the study areas named Dhaka, Chattogram, Chandpur, Savar, Narayanganj, Munshiganj, Manikganj, Tangail districts are carried out for the treatment of cardiovascular diseases. Although modern health services are available, the local people still relies on traditional medicine and showing the importance of traditional herbal treatment modalities. This result provides baseline data to link the local population, including traditional health professionals and scientific communities, which could be important in drug discovery.

Among the diseases categories highest (Fic) value was obtained in Cardiac complaints followed by Blood purifier, Chest pain, High blood pressure, and Antioxidant. The cardiac complaints were managed by a total of 80 medicinal plant species. Among the medicinal plants, the most cited were *Phyllanthus emblica* L., *Allium sativum* L., *Terminalia arjuna* (Roxb. Ex DC.) Wight & Arn., *Achyranthes aspera* L., *Terminalia chebula* Retz, *Allium cepa* L. In the blood purifier category, 76 species were used and *Phyllanthus emblica* L., *Terminalia chebula* Retz, *Allium cepa* L., were most cited. In the chest pain category, 20 species were used and the most cited were *Terminalia arjuna* (Roxb. Ex DC.) Wight & Arn., *Achyranthes aspera* L. In the High blood pressure category, 39 species were used and the most cited were *Phyllanthus emblica* L., *Allium sativum* L., *Terminalia arjuna* (Roxb. Ex DC.) Wight & Arn., *Terminalia chebula* Retz, *Allium cepa* L. In the Antioxidant category, 36 species were used and *Phyllanthus emblica* L, was the most cited plant. Among the 131 plant species, 45 species were scored 100% fidelity level as culturally important plant species. The record of 131 ethnomedicinal plant species with diverse use patterns reflected the traditional knowledge richness in the study area. Among the ethnomedicinal plants, 10 plant species including *Phyllanthus emblica* L., *Allium sativum* L, *Terminalia arjuna* (Roxb. Ex DC.) Wight & Arn, *Achyranthes aspera* L, *Terminalia chebula* Retz., *Allium cepa* L, *Adhatoda zeylanica* Nees, *Cinnamomum tamala* Nees & Eberm, *Cajanus cajan* (L.) Millsp, *Ipomoea aquatic* Forssk, were cited maximum times by the local people. These species had been used frequently in the study area for primary healthcare also. Among the ten plant species, local use of three species named *Allium cepa* L, *Cinnamomum tamala* Nees & Eberm, and *Ipomoea aquatic* Forssk had been studied because of identifying the effectiveness in chronic diseases.

Methanolic extract of the leaf of *A. cepa*, *I. aquatica*, and *C. tamala* showed 22.24 %, 28.96 %, and 58.99 % lysis of the clot respectively by using 100 µl of streptokinase as a positive thrombolytic control (30,000 I.U) on blood clots and distilled water as a negative control. It showed that the addition of 100 µl of streptokinase as a positive thrombolytic control (30000 I.U) to blood clots with 90 min of incubation at 37°C showed 68.79 % of clot lysis and distilled water was treated as a negative non-thrombolytic control, which exhibited negligible percentages of lysis of clots (2.04%). Of the three plants, *C. tamala* showed the highest thrombolytic activity for clot lysis rather than *I. aquatica* and *A. cepa* plants.

Based on observations and local people perception, most cited species named *Achyranthes aspera* L., *Cajanus cajan* (L.) Millsp., *Andrographis paniculata* Nees., *Aquilaria malaccensis* Lam., *Dioscorea alata* L., and *Rauvolfia serpentina* (L.) Benth. ex Kurz., were found very rare in the habitat and were also in danger because of anthropogenic pressure, deforestation, lack of knowledge about plants, and mismanagement of plantations in the study area. This survey has significant value for conservation managers and policymakers for the sustainable management of medicinal plant species which are threatened in nature. This species should be conserved before the elimination from nature. There is an urgent need to document this knowledge before it becomes extinct. These herbal remedies can be further tested against various diseases to discover their unexplored capacity and may be a potential source of biologically important drug components.

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Appendix

(Sample of data collection sheet)

