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# Angiosperm Diversity at Jamtala Village of Chapai Nawabganj District, Bangladesh with Emphasis on Medicinal Plants

**A.H.M. Mahbubur Rahman*, Moriom Jamila**

Plant Taxonomy Laboratory, Department of Botany, Faculty of Life & Earth Sciences, University of Rajshahi, Rajshahi, Bangladesh
*Corresponding author: ahmmahbubur_rahman@yahoo.com

**Abstract** Angiosperm diversity in the Jamtala village of Chapai Nawabganj district, Bangladesh has been studied. A total of 151 species belonging to 131 genera under 64 families were recorded. Habit analysis shows that herbs, shrubs, climbers and trees are represented by 59, 29, 18 and 45 species, respectively. Amaranthaceae, Acanthaceae, Asteraceae, Apocynaceae, Araceae, Arecaceae, Caesalpiniaceae, Cucurbitaceae, Euphorbiaceae, Fabaceae, Lamiaceae, Moraceae, Malvaceae, Mimosaceae, Myrtaceae, Poaceae, Rutaceae, Solanaceae, Verbenaceae are the dominant families with high species diversity. The present investigation deals with forty seven (47) medicinally important angiosperm plant species grown at Jamtala of Chapai Nawabganj district for treatment of different ailments such as asthma, cold, cough, diabetes, diarrhea, dysentery, fever, heart disease, itches, skin disease, paralysis, wound etc. This study provides immense scope for biochemical analysis and screening of the active principle of the medicinal plants present at Jamtala Village of Chapai Nawabganj district for futuristic growth in the field of drug development.

***Keywords:*** *angiosperm diversity, medicinal plants, indigenous uses, Chapai Nawabganj district*

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## 1. Introduction

Angiosperms are as important to humans as they are to other animals. Angiosperms serve as the major source of food-either directly or indirectly through consumption by herbivores-and, as mentioned above, they are a primary source of consumer goods, such as building materials, textile fibers, spices, herbs, and pharmaceuticals. Among the most important food plants on a global scale are cereals from the grass family (Poaceae); potatoes, tomatoes, eggplant, and red or chili peppers from the potato family (Solanaceae); legumes or beans (Fabaceae); pumpkins, melons, and gourds from the squash family (Cucurbitaceae); broccoli, cabbage, cauliflower, radish, and other vegetables from the mustard family (Brassicaceae, or Cruciferae); and almonds, apples, apricots, cherries, loquats, peaches, pears, raspberries, and strawberries from the rose family (Rosaceae). Members of many angiosperm families are used for food on a local level, such as ullucu *(Ullucus tuberosus)* in the Andes and cassava *(Manihot esculenta)* throughout the tropics. Tropical angiosperm trees are an important source of timber in the tropics and throughout the world [60,61].

The importance of studying local floristic diversity and medicinal uses has been realized and carried out in Bangladesh by [8-12], [19], [25], [28,29], [40], [45-53]. Moreover, the area supports a large number of angiosperm species including herbs, shrubs, climbers and trees. Like other parts of the country, the floristic elements of this area is in risk because of various anthropogenic activities including irrigation and modern agriculture, population settlements and firewood collection and also habit degradation. The present paper was focused an inventory of angiosperm diversity in the Jamtala village of Chapai Nawabganj district and to document the medicinal uses of plant species by the Santal people.

## 2. Materials and Methods

### 2.1. Study Area

Jamtala is a village under Nawabganj Sadar upazila of Chapai Nawabganj in the Division of Rajshahi Bangladesh. Nawabganj upazila area is 451.78 $km^2$ located in between 24°36′N 88°16′E Coordinates: 24°36′N 88°16′E. It is bounded by Gomastapur upazila on the north, on the north-east Nachole, on the west Shibganj and on the south-east Rajshahi Zila. Population: Total 530592; male 254629, female 275963; Muslim 507483, Hindu 20644, Buddhist 3, Christian 1239 and others 1223. Literacy rate: Average literacy 46.3 %; male 44.8 %, female 47.7%. Main sources of income: Agriculture 40 %, non-agricultural labourer 2.86%, Rice mils 62% and others mils 208%, commerce 16.87%, transport and communication 2.14%, service 26.26%, construction 5.80%, and others 12.65%. Ownership of agricultural land:

Landowner 60.36%, landless 40.64%; agricultural landowner: urban 47.12% and rural 60.64%.Main Crops: Paddy, jute, sugarcane, wheat, betel leaf, oil seeds, pulses. Main Fruits: Mango, jackfruit, litchi, black berry, palm, coconut, watermelon and boroi. Water bodies Main River: Mohanonda. Manufacturing Industries: Silk mill, textile mill, cold storage and aluminium factory are different types of manufacturing industries are present. Main exports Mango, Sugar, jute hessian, banana, pineapple, onion, garlic, vegetables [4].

## 2.2. Survey of Medicinal Information

In the present survey, a total of 47 plant species under 45 genera and 36 families were collected and recorded for their use in various ailments. A total of 150 Santal people having an age range 20-84 years were interviewed using semi-structured interviewed method. Professionally they were peasant, day labor, farmer, betel leaf cultivators, house wives, medicine men, small shop keepers etc. Among them 70 were female and rest 80 were male. Regular field studies were made in the study area during the period. The information about the plants used for various diseases was gathered through interviews and discussion with the elderly people, medicine men and traditional medical practitioners were also consulted. Plant specimens with flowers and fruits were collected and processed using standard herbarium techniques. Herbal plants referred by these people were authentically identified with the help of [1,2,3], [5,6,7], [13,14,15], [16,17], [20,21,22,23,24], [26,27], [30-43] and [44]. The voucher specimens are stored at The Herbarium, Department of Botany, and University of Rajshahi for future reference.

# 3. Results and Discussion

Angiosperm diversity in the village Jamtala of Chapai Nawabganj district, Bangladesh conducted during December 2013 to June 2015. A total of 151 species belonging to 131 genera under 64 families were recorded. Magnoliopsida (Dicotyledones) is represented by 51 families, 105 genera and 123 species, whereas Liliopsida (Monocotyledones) by 13 families, 26 genera and 28 species. These comprise of 59 herbs, 45 trees, 29 shrubs, 18 climbers belong to 64 families. Asteraceae, Euphorbiaceae andMoraceae are the largest family in Magnoliopsida represented by 8species in each and Liliopsida, Areaceae, Poaceae is the largest family with 5species (Table 1). Amaranthaceae, Acanthaceae, Asteraceae, Apocynaceae, Araceae, Arecaceae, Caesalpiniaceae, Cucurbitaceae, Euphorbiaceae, Fabaceae, Lamiaceae, Moraceae, Malvaceae, Mimosaceae, Myrtaceae, Poaceae, Rutaceae, Solanaceae, Verbenaceae are the dominant families with high species diversity. For each species botanical name, local name, habit, voucher number and family were provided of 151 species recorded here, herbs are represented by 59 (39.07%), trees by 45 (29.80%), shrubs by 29 (19.05%), climber by 18 (11.92%) (Figure 1).

**Table 1. Angiosperm Diversity in the Jamtala village of Chapai Nawabganj district, Bangladesh**

| Family name | Botanical name | Local name | Habit | SO* |
|---|---|---|---|---|
| Acanthaceae | *Adhatoda vasica* Nees. | Basak | Shrub | C |
| Acanthaceae | *Andrographis paniculata* Wall ex Nees | Kalomegh | Herb | C |
| Acanthaceae | *Justicia gendarussa* L. | Jagatmardan | Shrub | VC |
| Acanthaceae | *Ruellia suffruticosa* Roxb. | Chotpote | Shrub | C |
| Aloeaceae | *Aloe vera* (L.) Burm.f. | Gritakumari | Herb | C |
| Amaranthaceae | *Achyranthes aspera* L. | Apang | Herb | VC |
| Amaranthaceae | *Alternanthera philoxeroides* (Mart.) Griseb. | Helencha | Herb | VC |
| Amaranthaceae | *Amaranthus spinosus* L. | Katanotey | Herb | VC |
| Amaranthaceae | *Amaranthus viridis* L. | Notey | Herb | C |
| Amaranthaceae | *Celosia cristata* L. | Morogful | Herb | C |
| Anacardiaceae | *Mangifera indica* L. | Aam | Tree | VC |
| Annonaceae | *Polyalthia longifolia* (Sonn.) Thw. | Debdaru | Herb | C |
| Apiaceae | *Centella asiatica* (L.) Urban. | Thankuni | Herb | C |
| Apiaceae | *Coriandrum sativum* L. | Dhonepata | Shrub | C |
| Apocynaceae | *Carissa carandas* L. | Karomcha | Shrub | C |
| Apocynaceae | *Nerium indicum* Mill. | Rakta Karobi | Shrub | R |
| Apocynaceae | *Rauvolfia serpentina* Benth. | Sarpagandha | Herb | R |
| Araceae | *Alocasia indica* (Roxb.) Schott. | Mankochu | Herb | C |
| Araceae | *Amorphophallus campanulatus* (Roxb.) Bl. ex. Decne. | Olkachu | Herb | C |
| Araceae | *Colocasia esculenta* (L.) Schott. | Kochu | Herb | C |
| Araceae | *Lasia spinosa* (L.) Thw. | Kantakachu | Herb | R |
| Araceae | *Pistia stratiotes* L. | Topapana | Herb | C |
| Arecaceae | *Areca catechu* L. | Shupari | Tree | C |
| Arecaceae | *Borassus flabellifer* L. | Taal | Tree | VC |
| Arecaceae | *Cocos nucifera* L. | Narikel | Tree | VC |
| Arecaceae | *Phoenix sylvestris* (L.) Roxb. | Khajur | Tree | VC |
| Asclepiadaceae | *Calotropis procera* (Aiton) W. T. Aiton | Shet Akando | Shrub | C |
| Asclepiadaceae | *Hemidesmus indicus* (L.) R. Br. | Anantamul | Climber | R |
| Asteraceae | *Eclipta alba* (L.) Hassk | Kalokeshi | Herb | C |
| Asteraceae | *Enydra fluctuans* Lour | Helencha | Herb | R |

| | | | | |
|---|---|---|---|---|
| Asteraceae | *Eupatorium triplinerve* Vahl. | Ayapan | Shurb | C |
| Asteraceae | *Tagetes erecta* L. | Gendaphul | Herb | C |
| Asteraceae | *Tridax procumbens* L. | Tridhara | Herb | C |
| Asteraceae | *Vernonia patula* (Dryand.) Merr. | Kukshim | Hreb | C |
| Asteraceae | *Wedelia chinensis* (Osbeck) Merr. | Mahavingoraj | Herb | C |
| Asteraceae | *Xanthium indicum* J. Koenig ex Roxb. | Hagra | Herb | C |
| Bromeliaceae | *Annanas sativus* Schult.f. | Anaras | Herb | R |
| Basellaceae | *Basella alba* L. | Puishak | Climber | C |
| Bombacaceae | *Bombax ceiba* L. | Simul | Tree | C |
| Boraginaceae | *Heliotropium indicum* L. | Hatishur | Herb | C |
| Brassicaceae | *Brassica napus* L. | Mustard oil | Herb | C |
| Caesalpiniaceae | *Senna alata* (L.) Roxb. | Dadmardan | Shrub | R |
| Caesalpiniaceae | *Cassia fistula* L. | Bandar lathi | Tree | R |
| Caeslpiniaceae | *Senna sophera* (L.) Roxb. | Kalkasunde | Shrub | C |
| Caesalpinaceae | *Saraca indica* L. | Ashok | Tree | R |
| Caesalpiniaceae | *Tamarindus indica* L. | Tetul | Tree | C |
| Cannaceae | *Canna indica* L. | Kolaboti | Herb | C |
| Chenopodiaceae | *Chenopodium album* L. | Batuashak | Herb | C |
| Commelinaceae | *Commelina benghalensis* L. | Kanshira | Herb | C |
| Combretaceae | *Terminalia arjuna* (Roxb. ex DC.) Wight & Arn. | Arjun | Tree | C |
| Combretaceae | *Terminalia billirica* (Gaertn.) Roxb. | Bahera | Tree | R |
| Combretaceae | *Terminalia chebula* (Gaertn.) Retz. | Haritaki | Tree | R |
| Convolvulaceae | *Ipomoea alba* L. | Dudh kolmi | Climber | C |
| Convolvulaceae | *Ipomoea aquatica* Forssk. | Kalmishak | Climber | C |
| Convolvulaceae | *Ipomoea batatas* (L.) Lamk. | Mistialu | Climber | C |
| Costaceae | *Costus speciosus* (Koenig) Sm. | Keu | Herb | R |
| Crassulaceae | *Bryophyllum pinnatum* (Lam.) Oken | Pathorkuchi | Herb | C |
| Caricaceae | *Carica papaya* L. | Pepe | Tree | VC |
| Cucurbitaceae | *Benincasa hispida* (Thunb.) Cogn. | Chalkumra | Climber | C |
| Cucurbitaceae | *Coccinia grandis* (L.) Voigt | Telakucha | Climber | C |
| Cucurbitaceae | *Lagenaria siceraria* (Mol.) Stan. | Lau | Climber | C |
| Cucurbitaceae | *Momordica charantia* L. | Korolla | Climber | VC |
| Cuscutaceae | *Cuscuta reflexa* Roxb. | Shornolota | Climber | C |
| Cyperaceae | *Cyperus rotundus* L. | Mutha | Herb | C |
| Ebenaceae | *Diospyros malabarica* (Desr.) Kostel | Gaab | Tree | C |
| Euphorbiaceae | *Acalypha indica* L. | Muktajuri | Herb | C |
| Euphorbiaceae | *Croton bonplandianus* Baill. | Croton | Herb | C |
| Euphorbiaceae | *Euphorbia antiquorum* L. | Sibgach | Shrub | C |
| Euphorbiceae | *Euphorbia hirta* L. | Dudhiya | Herb | C |
| Euphorbiceae | *Jatropha gossypifolia* L. | Lalkundu | Shrub | C |
| Euphorbiaceae | *Phyllanthus emblica* L**.** | Amloki | Tree | C |
| Euphorbiaceae | *Phyllanthus reticulatus* Poir. | Chitki | Shrub | C |
| Euphorbiaceae | *Ricinus communis* L**.** | Bherenda | Shrub | C |
| Elaeocarpaceae | *Elaeocarpus robustus* Roxb. | Jolpai | Tree | C |
| Fabaceae | *Cajanus cajan* (L.) Huth. | Arhor daal | Shrub | C |
| Fabaceae | *Clitoria ternatea* L. | Oporajita | Climber | C |
| Fabaceae | *Erythrina variegata* L. | Madar | Tree | C |
| Fabaceae | *Lablab purpureus* (L.) Sweet. | Shim | Climber | C |
| Lamiaceae | *Leonurus sibiricus* L. | Raktodrone | Herb | C |
| Laminaceae | *Leucas aspera* (Willd.) Link. | Setodrone | Herb | VC |
| Lamiaceae | *Leucas cephalotes* (Roth.) Spreng. | Dandakolos | Herb | C |
| Lamiaceae | *Ocimum sanctum* L. | Tulshi | Shrub | C |
| Liliaceae | *Allium cepa* L. | Piaj | Herb | VC |
| Lilaceae | *Allium sativum* L. | Rosun | Herb | VC |
| Liliaceae | *Asparagus racemosus* Willd. | Shotomuli | Climber | R |
| Lythraceae | *Lagerstroemia speciosa* (Linn.) Pres. | Jarul | Tree | C |
| Lythraceae | *Lawsonia inermis* Linn. | Mehedi | Shrub | C |
| Malvaceae | *Abelmoschus esculentus* (L.) Moench. | Dherosh | Shrub | C |
| Malvaceae | *Hibiscus rosa-sinensis* L. | Joba | Shrub | VC |
| Malvaceae | *Sida cordifolia* L. | Berela | Herb | C |
| Menispermaceae | *Tinospora cordifolia* Willd. | Guloncho | Climber | C |
| Mimosaceae | *Acacia nilotica* (L.) Del. | Babla | Tree | VC |

| | | | | |
|---|---|---|---|---|
| Mimosaceae | *Albizia procera* (Roxb.) Benth. | Koroi | Tree | VC |
| Mimosaceae | *Mimosa pudica* L. | Lojjaboti | Climber | C |
| Moraceae | *Artocarpus heterophyllus* Lamk. | Kathal | Tree | VC |
| Moraceae | *Artocarpus lacucha* Buch.-Ham | Deua | Tree | R |
| Moraceae | *Ficus benghalensis* L. | Bot | Tree | VC |
| Moraceae | *Ficus hispida* L. f. | Khoksadumur | Tree | VC |
| Moraceae | *Ficus racemosa* L. | Jagdumur | Tree | C |
| Moraceae | *Ficus religiosa* L. | Pakur | Tree | VC |
| Moraceae | *Morus indica* L. | Tut | Tree | C |
| Moraceae | *Streblus asper* Lour. | Sheora | Tree | R |
| Molluginaceae | *Glinus oppositifolius* (L.) A. DC. | Gima shak | Herb | R |
| Moringaceae | *Moringa oleifera* Lam. | Sojna | Tree | VC |
| Meliaceae | *Azadirachta indica* A. Juss. | Neem | Tree | VC |
| Musaceae | *Musa sapientum* Linn. | Kola | Shrub | VC |
| Myrtaceae | *Psidium guajava* L. | Peyara | Tree | VC |
| Myrtaceae | *Syzygium cumini* (L.) Skeel. | Jam | Tree | VC |
| Nelumbonaceae | *Nelumbo nucifera* Gaertn. | Poddo | Herb | R |
| Nymphaeaceae | *Nymphaea nouchali* Burm. f. | Sapla | Herb | C |
| Nymphaeaceae | *Nymphaea stellata* Willd. | Chhotoshaluk | Herb | C |
| Oxalidaceae | *Averrhoa carambola* L. | Kamranga | Tree | C |
| Oxalidaceae | *Oxalis corniculata* L. | Amrul | Herb | C |
| Papaveraceae | *Argemone mexicana* L. | Shialkanta | Herb | C |
| Piperaceae | *Piper betle* L. | Pan | Climber | C |
| Piperaceae | *Piper longum* L. | Pipul | Climber | R |
| Piperaceae | *Piper nigrum* L. | Golmarich | Climber | R |
| Poaceae | *Bambusa arundinacea* (Retz.) Willd | Bamboo | Tree | VC |
| Poaceae | *Cynodon dactylon* (L.) Pers. | Durbaghas | Herb | VC |
| Poaceae | *Oryza sativa* L. | Dhan | Herb | VC |
| Poaceae | *Saccharum officinarum* L. | Aakh | Shrub | C |
| Poaceae | *Zea mays* L. | Vutta | Shurb | VC |
| Polygonaceae | *Persicaria hydropiper* L. | Pani Morich | Herb | C |
| Pontederiaceae | *Eichhornia crassipes* (Mart.) Sol.-Lau. | Kochuripana | Herb | VC |
| Portulacaceae | *Portulaca oleracea* L. | Nunia shak | Herb | C |
| Punicaeae | *Punica granatum* Linn. | Dalim | Tree | VC |
| Rhamnaceae | *Zizyphus mauritiana* Lamk. | Boroi | Tree | VC |
| Rubiaceae | *Anthocephalus chinensis* (Lamk.) Rich. ex Walp. | Kadam | Tree | C |
| Rubiaceae | *Paederia foetida* L. | Gandhavaduli | Shrub | R |
| Rutaceae | *Aegle marmelos* (L.) Correa | Bel | Tree | C |
| Rutaceae | *Citrus aurantifolia* (Christ.) Sw. | Lebu | Shrub | VC |
| Rutaceae | *Feronia limonia* (L.) Swingle | Kodbel | Tree | C |
| Rutaceae | *Murraya paniculata* (L.) Jack | Kamini | Shrub | C |
| Sapotaceae | *Mimusops elengi* L. | Bokul | Tree | R |
| Solanaceae | *Capsicum frutescens* L. | Marich | Herb | VC |
| Solanaceae | *Cestrum nocturnum* L. | Hasnahena | Shrub | C |
| Solanaceae | *Datura metel* L. | Dhutura | Shrub | C |
| Solanaceae | *Solanum nigrum* L. | Titbegun | Herb | C |
| Solanaceae | *Solanum torvum* Swartz. | Hat Begun | Shrub | C |
| Solanaceae | *Withania somnifera* (L.) Dunal. | Aswagandha | Shrub | R |
| Sterculiaceae | *Abroma augusta* (L.) f. | Ulat Kambal | Shrub | R |
| Tiliaceae | *Corchorus capsularis* L. | Titapat | Shrub | C |
| Trapaceae | *Trapa bispinosa* Roxb. | Panifol | Herb | C |
| Verbenaceae | *Clerodendrum viscosum* Vent. | Bhat | Shrub | VC |
| Verbenaceae | *Nyctanthes arbortristis* L. | Sheuli | Shrub | C |
| Verbenaceae | *Phyla nodiflora* (L.) Greene | Bhui Okar | Herb | C |
| Verbenaceae | *Vitex negundo* L. | Nisinda | shrub or small tree | C |
| Zingiberaceae | *Curcuma longa* L. | Holud | Herb | VC |
| Zingiberaceae | *Curcuma zedoaria* Rosc. | Sothi | Herb | C |
| Zingiberaceae | *Zingiber officinale* Roscoe. | Ada | Herb | C |

*SO = Status of Occurrence, VC = Very common, C = Common, R= Rare.

Based on this study, a preliminary list of angiosperm flora in Jamtala Village under Sadar Upazila of Chapai Nawabganj district, Bangladesh was made that includes 151 angiosperm species under 131 genera and 64 families

(Table 1). The collected information is comparable with the result of other studies in Bangladesh. A total of 243 species belonging to 195 genera under 95 families were recorded in Khagrachhari district [8]. A total of 535 species belonged to 370 genera and 103 families are documented in Tekhnaf Wildlife Sanctuary [58]. A total of 425 species belonging to 321 genera 108 families are recorded in Rajshahi district [18]. A total of 302 species belonging to 243 genera 84 families are recorded in Bangladesh Police Academy, Rajshahi [40]. Distribution of angiosperm species in the families shows variation. The family Asteraceae, Euphorbiaceae and Moraceae is represented by 8 species in each. Solanaceae is represented by 6 species. Each of Amaranthaceae, Casalpinaceae, Arraceae and Poaceae is represented by 5 species. Acanthaceae, Apocynaceae, Cucurbitaceae, Fabaceae, Rutaceae, and Lamiaceae are represented by 4 species. A single species in each was recorded by 34 families while two to six species in each was recorded by 26 families (Table 1).

The important medicinal plant species at Jamtala village of Chapai Nawabganj district were highlighted. A total of 47 medicinal plant species belonging to 45 genera and 36 families were collected and recorded for their use in various ailments. Most of the local people in the study area are poor are illiterate. In one hand, these people are out of the reach of modern medicines and on other hand, the market price of most available medicines are very expensive. As a result, these medicinal plants are used by them to cure following the diseases, especially for asthma, cough, cold, small pox, dysentery, diarrhea, diabetes, eczema, fever, and itches, paralysis, piles, skin diseases, snake-bite, dog-bite, toothache, wound and others (Table 2). The collected medicinal information comparable with the result of other studies in Bangladesh [17,26,27,42] and [48-53]. The most frequently used species for the treatment of different diseases are *Aegle marmelos* (L.)Correa, *Aloe vera* (L) Burm.f., *Allium cepa* L., *Allium sativum* L., *Annanas sativus* Schult.f., *Azadirachta indica* A. Juss., *Bombax ceiba* L., *Carica papaya* L.,*Coccinia grandis* (L.) Voigt, *Cynodon dactylon* (L.) Pers., *Ficus racemosa* L., *Eclipta alba* (L.) Hassk., *Lawsonia inermis* L., *Mimosa pudica* L., *Moringa oleifera* Lam., *Musa sapientum* Linn., *Ocimum sanctum* L., *Syzygium cumini* (L.) Skeel., *Terminalia arjuna* (Roxb. ex DC.) Wight & Arn., *Vitex negundo* L. and *Zingiber officinale* Roscoe. Among the medicinal use of plants, the survey reported a good number of new uses those were not mentioned in the previous literatures [17,26,27,42] and [48-53].

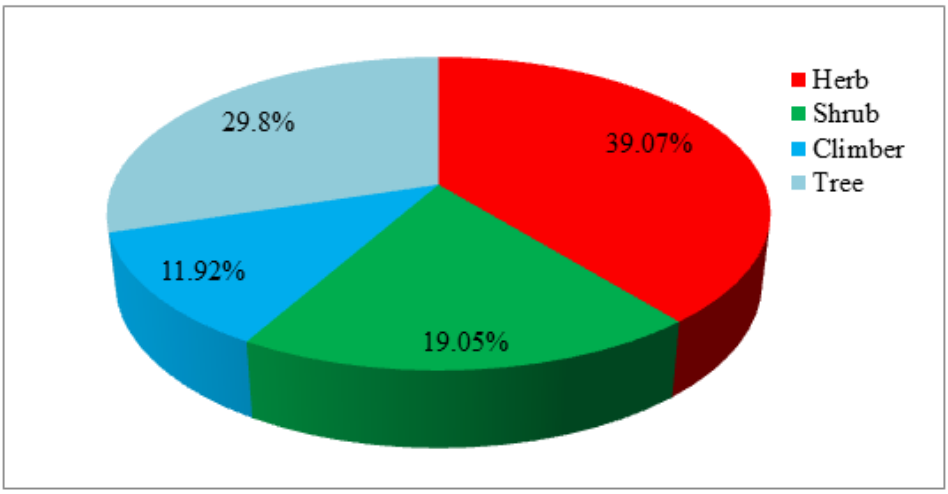


**Figure 1.** Analysis of data based on habit showed the Angiosperm Flora in Pie Chart

**Table 2. Medicinal plant species are used by the Santal tribe in the Jamtala village of Chapai Nawabganj District, Bangladesh**

| Scientific Name | Local name and Family name | Part(s) used | Treatment process |
|---|---|---|---|
| *Aegle marmelos* (L.) Corr. | LN=Bel F=Rutaceae | Root | Roots extract mixed with cow milk and sugar is taken to cure dysentery. Juice of root mixed with water is used in heart disease. |
| *Allium cepa* L. | LN=Piaj F=Liliaceae | Bulb | Macerated bulb juice is applied on the affected area for snake bite. |
| *Allium sativum* L. | LN=Rosun F=Liliaceae | Leaf | Garlic is taken with hot rice to treat high blood pressure. |
| *Alstonia scholaris* (L.) R. Br. | LN=Chatim F=Apocynaceae | Latex | The milky juice mixed with oil used in earache. Paste made from dry bark is used in rheumatism. The milky juice is used in ulcers. |
| *Alternanthera philoxeroides* (Mart.) Griseb. | LN=Helencha F=Amaranthaceae | Whole plant | Plant juice is used for fever. |
| *Aloe vera* (L) Burm. f. | LN=Gritakumari F=Aloeaceae | Leaf | Leaves Juice mixed with sugar is used to remove body weakness specially sex problem. Paste prepared from leaf is used for skin care. |
| *Amaranthus viridis* L. | LN=Noteyshak F=Amaranthaceae | Whole plant | The plant juice mixed with water is used in piles. The plant juice mixed with water is used in stomachic. |
| *Annanas sativus* Schult. f. | LN=Anaras F=Bromeliaceae | Young leaf | Extract prepared from young leaf is taken to stop vomiting. |
| *Artocarpus heterophyllus* Lamk. | LN=Kathal F=Moraceae | Root | Decoction of roots is used for diarrhea. Latex obtained from the plant is used in skin diseases. |
| *Averrhoa carambola* L. | LN=Kamranga F=Oxalidaceae | Fruit, Leaves | Decoction of leaves and fruits is taken to cure influenza fever. |

| | | | |
|---|---|---|---|
| *Azadirachta indica A.* Juss. | LN=Neem F=Meliaceae | Leaf | Paste of leaves is used in chicken pox. |
| *Basella alba* L. | LN=Puishak F=Basellaceae | Leaf | Paste made from leaves is used in burning sensation. Juice made from leaves is used in constipation. Root chewed for toothache. |
| *Bombax ceiba* L. | LN=Shimul F=Bombacaceae | Root | Roots extracts mixed with boiled water are given for sexual weakness in males. Grinding decoction of root -bark is taken to cure rheumatism. |
| *Carica papaya* L. | LN=Pepe F=Caricaceae | | Fruits pulp with bellam is used for stomachic. |
| *Centella asiatica* (L.) Urban. | LN=Thankuni F=Apiaceae | Whole plant | Juice made from whole plant taken to cure Tuberculosis. |
| *Citrus aurantifolia* (Christ.) Sw. | LN=Lebu F=Rutaceae | Fruit | Juice obtained from fruits along with warm water and honey is used in catarrhal fever. |
| *Coccinia grandis* (L.) Voigt | LN=Telakucha F=Cucurbitaceae | Leaves | Crushed leaves juice mixed with water are used for fever. Warmed juice obtained from plant is used in diabetes. Crushed leaves juice mixed with water are used for vomiting. |
| *Coriandrum sativum* L. | LN=Dhone F=Apiaceae | Whole plant | Juice of whole plant mixed with salt is used for fever. |
| *Curcuma longa* L. | LN=Holud F=Zingiberaceae | Rhizome | Paste made from rhizome is used in scabies. |
| *Cynodon dactylon* (L.) Pers. | LN=Durbaghas F=Poaceae | Whole plant | Macerated fresh juice is used in fresh cuts and wounds to stop bleeding. |
| *Cyperus rotundus* L. | LN=Mutha F=Cyperaceae | Tuber | Decoction of the tubers is used in fever. |
| *Elaeocarpus robustus* Roxb. | LN=Jalpai F=Elaeocarpaceae | Fruit | Juice made from fruits is used in bronchitis. Fruits juice is used in cold and cough. |
| *Ficus benghalensis* L. | LN=Bot F=Moraceae | Young bud | Decoction of young buds is used in bronchitis, dysentery and diarrhea. Juice obtained from arial roots is used to obstinate vomiting. |
| *Ficus racemosa* L. | LN=Jogdumur F=Moraceae | Gum | Gum is used mixed with water for treatment of diabetes. |
| *Heliotropium indicum* L. | LN=Hatisur F=Boraginaceae | Leaf | Juice made from leaves is used in dog bite. |
| *Lagenaria siceraria* (Mol.) Stan. | LN=Lau F=Cucurbitaceae | Fruit | Pulp of the fruit is used in diuretic. Juice of fruits mixed with water is used for piles. |
| *Lawsonia inermis* Linn. | LN=Mehedi F=Lythraceae | Leaf | Leaves paste is used for old skin diseases. Leaves paste mixed with neem paste and water administered for gastrointestinal ulcers. |
| *Mangifera indica* L. | LN=Aam F=Anacardiaceae | Leaves | Decoction of the leaves is given to cure fever. Decoction of the leaves is given to cure toothache. |
| *Mimosa pudica* L. | LN=Lajjaboti F=Mimosaceae | Root | Roots of the plant soaked in raw cow milk are used in snake bites. |
| *Moringa oleifera* Lam. | LN=Sojna F=Moringaceae | Root | Roots extract juice is used for fever. Seed oil is given for rheumatism. |
| *Musa sapientum* Linn. | LN=Kala F=Musaceae | Spadix, bark | Spadix is taken as curry to control diabetes. Bark juice is used Snake bite. Stem juice is applied to stop bleeding. |
| *Ocimum sanctum* L. | LN=Tulsi F=Lamiaceae | Leaf | Slightly warmed leaf juice is used to treat bronchitis. |
| *Paederia foetida* L. | LN=Gandhavaduli F=Rubiaceae | Leaf | Juice of leaves is taken to cure paralysis. Juice of leaves along with macerated of turmeric juice is used in piles. |
| *Persicaria hydropiper* L. | LN=Biskatali F=Polygonaceae | Whole plant, flower | Pound fresh part applied on the affected area, treating for eczema. The juice of flowers is used against gout. |
| *Psidium guajava* L. | LN=Piyara F=Myrtaceae | Root | Root paste mixed with water is used to treat diarrhea and dysentery. |
| *Punica granatum* Linn. | LN=Dalim F=Punicaceae | Fruit | Fruits juice is used for diarrhea. Decoction of pericarp is taken for piles. |
| *Rauvolfia serpentina* Benth. | LN=Sarpagandha F=Apocynaceae | Root | Grinding, decoction of roots is used in high blood pressure. |
| *Ricinus communis* L. | LN=Bherenda F=Euphorbiaceae | Leaves | Juice of tender leaves is given with sugar in dysentery. |
| *Saccharum officinarum* L. | LN=Aakh F=Poaceae | Stem | Stem juice is used to cure fever. |
| *Senna alata* (L.) Roxb. | LN=Dadmardan F=Caesalpiniaceae | Leaves, stem bark | Decoction of leaves and flowers is used for eczema. Paste made from stem bark is also used in eczema. |
| *Syzygium cumini* (L.) Skeel. | LN=Kalojam F=Myrtaceae | Bark | Decoction of bark is used in asthma. |
| *Tagetes erecta* L. | LN=Gendaphul F=Asteraceae | Whole plant | Infusion of the plant is used against rheumatism. |
| *Tamarindus indica* L. | LN=Tetul F=Caesalpiniaceae | Fruit | Pulp of the ripe fruit is a household remedy for fever. Juice made from fruits is used in diarrhea. |
| *Terminalia arjuna* (Roxb. ex DC.) Wight & Arn. | LN=Arjun F=Combretaceae | Stem bark | Stem bark extracts mixed with cold water is used in high blood pressure and to cure heart disease. Stem bark powder mixed with oil is taken to bone fracture. |
| *Vitex negundo* L. | LN=Nisinda F=Verbenaceae | Leaves | A decoction of the leaves along with long pepper is given in catarrhal fever. |
| *Withania somnifera* (L.) Dunal. | LN=Aswagandha F=Solanaceae | Root | Decoction of root is used for asthma. |
| *Zingiber officinale* Roscoe. | LN=Ada F=Zingiberaceae | Rhizome | A mixture of ginger juice, leaf juice of *Ocimum sanctum* and honey is taken orally to infantile cough and catarrhal fever. Decoction of dried ginger is used to cure asthma. |

*LN= Local Name, F=Family.


**Figure 2.** Photographs of important angiosperm plant species in the study area

**A)**Moringa oleifera Lam., **B)** Mimusops elengi L., **C)** Diospyros malabarica (Desr.)Kostel, **D)** Bryophyllum pinnatum (Lam.) Oken, **E)** Acacia nilotica (L.) Del., **F)** Albizia procera (Roxb.) Benth., **G)** Mimosa pudica L., **H)** Senna alata(L.) Roxb., **I)** Cassia fistula L., **J)** Senna sophera (L.) Roxb., **K)** Saraca indica L., **L)** Tamarindus indica L., **M)** Cajanus cajan (L.) Huth., **N)** Clitoria ternatea L., **O)** Erythrina variegata L., **P)** Lablab purpureus (L.) Sweet., **Q)** Lagerstroemia speciosa (Linn.) Pres., **R)** Lawsonia inermis Linn., **S)** Trapa bispinosa Roxb., **T)** Psidium guajava L.

## 4. Conclusion

The present findings are probably the new record of ethno-medicinal knowledge for the study area using standard research protocols. The present study may be a preliminary contribution to the ethno-medicine of this area using standard research methods, focusing on medicinal plants and their local uses for the healthcare. This healthcare knowledge transmitted orally from one generation to generation. The study also suggested that the present information on medicinal use of plants by local and ethnic community may be used for botanical and pharmacological research in future for the discovery of new sources of drugs.

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