



Ethnobotanical Survey on Joypurhat Sadar region of Joypurhat District of Bangladesh

(This report presented in partial fulfillment of the requirements for the degree of Bachelor of Pharmacy)

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APPROVAL

This Project, Ethnobotanical Survey on Joypurhat Sadar region of Joypurhat District of Bangladesh submitted by Md. Abdul Wahed to the Department of Pharmacy, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of Bachelor of Pharmacy and approved as to its style and contents.

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DECLARATION

I hereby declare that, this project report is done by me under the supervision of Md. Arifur Rahman, Assistant Professor and Head, Department of Pharmacy, Daffodil International University, impartial fulfillment of the requirements for the degree of Bachelor of Pharmacy. I am declaring that this Project is my original work. I also declare that neither this project nor any part thereof has been submitted elsewhere for the award of Bachelor or any degree.

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At first I would like to thank the almighty Allah for giving me the opportunity and capability to complete this research. Then I would like to thank my parents for all the sacrifices that they have made on our behalf.

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Dedicated To.....

MY BELOVED PARENTS & SUPERVISOR

ABSTRACT

The primarily rural population of Bangladesh relies on traditional medicinal practitioners (Kavirajes) for treatment of their various ailments. Although in general the Kavirajes practice the Ayurvedic system of medicine, each Kaviraj nevertheless has his own special knowledge of indigenous medicinal plants, which they use to treat patients. Rural home garden is an important traditional source of medicinal plants for daily curative uses throughout Bangladesh. Such knowledge is continuing from generation to generation without documentation. An ethnobotanical investigation was conducted through focus group discussions and households' survey accompanied by field observation to document the indigenous knowledge of herbal medicines being used by the rural communities during October 2014 to November 2014 of Joypurhat Sadar of Joypurhat district in Bangladesh. The selection of medicinal plant for the treatment of a given ailment by a Kaviraj has been found to be quite several in a number of previous ethnobotanical surveys conducted in different areas of the country. A total of 20 ethnomedicinal plant species belonging to 14 families were found, where trees (37.78%) were the most commonly utilized growth form. A total of 20 plants distributed was found to be used by the 6 Kavirajes & 2 nursery owners interviewed for the treatment of various ailments like heart disease, stomachic purgative, emmanogogue, antihelmentic, Acidity, Baldness, Chicken-pox, Common cough and cold, Constipation, Chronic Headache, Chronic Fever, Darkness before the Eyes, Discharge of Albumin, Dryness in the Body, Diabetes, Dysentery, Gout, Hair-Loss, High Blood Pressure, edema, haemorrhoids, rheumatism, Hysteria, Indigestion, Itching on the Body, Eruptions, Jaundice, dysentery, sexually transmitted diseases (STDs) like gonorrhoea, diseases of the urinary tract, respiratory diseases, Wound healing activity, Antifungal activity, antihemorrhoidal, analgesic antiosteoporotic, Joint pains, Menorrhagia, dysmenorrhoea, anti-bacterial, anti-cancer etc. Whole plants & plant parts like leaves, stems, bark, roots, fruits, flowers, seeds, tubers, gum, & rhizomes were used in various formulations. Ayurvedic influences were observed in the use of several plants in the Kavirajes formulations. Indigenous medicinal practice have served as an effective method towards discovery of new & efficacious drugs. From above view, the plants used by Kavirajes of Joypurhat Sadar Upazilla of Joypurhat district merit potential for further scientific studies which may lead to discovery of lead compound & novel drugs.

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Chapter one

Introduction

Introduction

1.1. Ethnobotany :Ethnobotany is the study of the interaction between plants and people, with a particular emphasis on traditional tribal cultures. Over the past decade, there has been a dramatic increase in the demand for medicinal plants for use in traditional medicine and contemporary and alternative medicine in both developing and developed countries ; thus, a large number of people habitually use such medication because herbal treatment is, in some cases, considered relatively cheap. According to the World Health Organization (WHO) about 65-80% of the world's population in developing countries depends essentially on plants for their primary healthcare due to poverty and lack of access to modern medicine. They use their perceptions and experiences to categorize plant species indigenously and local people over the past period take traditional medicine. Traditional medicinal practices are common in Ethiopia in which about 80% of the population in the country use plant based traditional medicine by indigenous knowledge as their major primary health care system. Traditional knowledge of medicinal plants and their use by indigenous healers and drug development in the present are not only useful for conservation of cultural tradition and biodiversity but also for community health care and drug development in the local people. The indigenous knowledge on medicinal plants appears when humans started and learned how to use the traditional knowledge on medicinal plants. Bangladesh is a country that is considered rich in medicinal plants genetic resources by virtue of its favorable agroclimatic condition and seasonal diversity. With productive soils, a tropical climate, and seasonal diversity, Bangladesh contains about 6500 plants species including bryophytes, pteridophytes, gymnosperms, and angiosperms; among them, 500 plant species have medicinal values and grow in the country's forests, wetlands, homestead forests, and even roadside as indigenous, naturally occurring, or cultivated plants. About 75% (10 million households in over 85,000 villages) of the country's total population lives in rural areas [8], and almost 80% is dependent on natural resources (e.g., medicinal plants) for their primary healthcare, with herbal medication remaining a popular and accepted form of treatment.

Rural peoples are capable to identify many species of plants that are capable of producing various products, including food, firewood, medicine, forage, and daily needs tools, and the customary homestead tree production system also serves as a source of plant products and

remedies. Despite such a high demand of herbal medicine, medicinal plants sector is now the most promising business sector in Bangladesh with the presence of more than 500 companies producing herbal medicines , and more than 90% of the plants and products needed to meet domestic demand are imported from other countries, such as India, Nepal, and Pakistan. The indigenous knowledge (IK) concerning medicinal plants is lost owing to the change of habitats and culture of rural communities in Bangladesh.

1.2.About Bangladesh



Bangladesh officially the People's Republic of Bangladesh (গণপ্রজাতন্ত্রী বাংলাদেশ), is a country in South Asia; and is bordered by India to its west, north and east; Burma to its southeast and separated from Nepal and Bhutan by the Chicken's Neck corridor. To its south, it faces the Bay of Bengal. Bangladesh is the world's eighth-most populous country, with over 160 million people, and among the most densely populated countries. It forms part of the ethno-linguistic region of Bengal, along with the neighbouring Indian states of West Bengal and Tripura.

The present-day borders of Bangladesh took shape during the Partition of Bengal and British India in 1947, when the region came to be known as East Pakistan, as a part of the newly formed state of Pakistan. It was separated from West Pakistan by 1,400 km of Indian territory. Due to political exclusion, ethnic and linguistic discrimination and economic neglect by the politically


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dominant western wing, nationalism, popular agitation and civil disobedience led to the Bangladesh Liberation War and independence in 1971. After independence, the new states endured poverty, famine, political turmoil and military coups. The restoration of democracy in 1991 has been followed by relative calm and economic progress. In 2014, the Bangladesh

1.3. Major Division of Bangladesh



1.4.Profile of Bangladesh:

Anthem	Amar Sonar Bangla
Ethnic groups	Bengali
Demonym	Bangladeshi
Government Seal of Bangladesh	
Capital	Dhaka
Government	Unitary parliamentary constitutional republic
Liberation of Bangladesh	16 December 1971
Constitution	4 November 1972
Religion	Islam
Currency	Taka (৳) (BDT)
Legislature	Jatiyo Sangshad

general election was boycotted by major opposition parties, resulting in a parliament and government dominated by the Awami League and its smaller coalition partners. Bangladesh is a unitary parliamentary republic with an elected parliament called the Jatiyo Sangshad. The native Bengalis form the country's largest ethnic group, along with indigenous peoples in northern and southeastern districts.

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Bangladesh is a Next Eleven emerging economy. It has achieved significant strides in human and social development since independence, including in progress in gender equity, universal primary education, food production, health and population control. However, Bangladesh continues to face numerous political, economic, social and environmental challenges, including political instability, corruption, poverty, overpopulation and climate change.

1.5. Joypurhat District:



1.6. Background history of Joypurhat district:

Joypurhat is a small district located in the northern part of Bangladesh. Joypurhat was an area of Pala Empire & Sena dynasty from a long age. Till 16th and 17th centuries, there was no clear info about Joypurhat. The previous name of the region was “Baghabari Hat” and next it was written “Gopandrananj Hat” in historical documents. During the British East India period, Joypurhat Railway station and post office was established and named Joypurhat to make differ with the name of Joypur located in current India. Then the region got familiarity with the name of Joypurhat with the passing of age. A police station named Joypurhat was established in 1907. Joypurhat was the only subdivision of the formerly Bogra district. After the liberation of Bangladesh, Joypurhat started its journey as a district in 1984. Saotal, Orao, Munda, Mohali,

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Mohanta, Rajhangshi etc tribes also found in the district and total population of such tribes is about forty seven thousand.

Sub-districts of Joypurhat:

There are five sub-districts –

Upazila	Population
1.Joypurhat Sadar	2,56,691
2.Akkelpur	1,28,952
3.Panchbibi	2,40,979
4.Khetlal	1,15,871
5.Kalai	1,29,329

Bordered By:Joypurhat District is bordered by Dinajpur, Gaibandhadistrict and West Bengal (Indian State) to the north, Bogra and Naogaondistrict to the south, Bogra and Gaibandha districts to the east, Naogaon districts and West Bengal to the west.

River:Bangladesh is a country of many rivers. There are 5 rivers in Joypurhat District.

- Small Jamuna River; passes through Joypurhat Sadar Upazila and Panchbibi Upazila
- Chiri River; passes through Panchbibi Upazila
- Haraboti River; passes through Panchbibi Upazila
- Sree River; passes through Chakbarkat Joypurhat Sadar Upazila

Road: Joypurhat is a small district in Rajshahi Division. It has 342.59 km cobbled road, 61.59 km semi-cobbled road and 1569 km raw road.

Railway Station:Joypurhat contains 8 railway stations. The total Railway of joypurhat is 38.86 km.

- Joypurhat Railway Station, Joypurhat Sadar Upazila.
- Panchbibi Railway Station, Panchbibi Upazila.
- Jamalganj Railway Station, Akkelpur Upazila.
- Akkelpur Railway Station, Akkelpur Upazila.

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- Jafarpur Railway Station, Akkelpur Upazila.
- Tilakpur Railway Station, Akkelpur Upazila.
- Puranapail Railway Station, Joypurhat Sadar Upazila.
- Bagjana Railway Station, Panchbibi Upazila.

Joypurhat Railway Station was established in 1884 in British Raj period. It is a very important railway station in the northern part of Bangladesh.

Education: There are four levels education system available in this district like others part of Bangladesh. These levels are-1) Primary level-5 years, 2) Secondary level-5 years, 3) Higher secondary level-2 years & 4) University level-4 years. Besides Bengali, the native language, English is compulsory at all levels of education system. There are no university, 42 collage (including 3 govt collage), a women cadet collage, 165 secondary high school (including gov. 4), 350 primary school (including gov- 263), a technical school and collage, 13 technical educational institutions, 111 Madrashes, 01 PTI in Joypurhat. In addition to this some kindergarten school, English medium schools are mainly available in the Joypurhat Sadar & the Upazila towns.

Language: Most of the peoples of Joypurhat district speaking in local language. But yet original Bengali-speaking peoples are available in this district town & Upazila towns.

Population: Total population of Joypurhat district is 9,13,768 according to 2011 survey. Out of total population people male is 4,59,284 & female is 4,54,484.

Literacy: The literacy rate of Joypurhat district is 57.5%, male is 61.4% & female is 53.5%.

Transportation: Train & bus is the most cheapest & available transport system of this district. Railway system is also convenient & connected with Joypurhat Sadar, Panchbibi & Akkelpur Upazila of Joypurhat district. Rickshaw, Van, Auto rickshaw, Scuter, Nosimon are the most cheaper, convenient & available transport system will be seen all over the district. There are one kind of tricycle system driven by one person & can easily carry two to up to ten passengers at a time. Inter sub-district buses are frequently depart from Joypurhat central bus terminal located in the east part of the city. Super luxury day & night coaches are available from most of the sub-district & Joypurhat city with capital city of Dhaka.



Religion: The district of Joypurhat has 2573 mosques, 186 mosque-based library, 675 trained Imam, 2200 Imam, 424 temples, 21 churches and 18 Buddhist temples. Hinda - Kasba Shahi Mosque is one of the beautiful mosque in Joypurhat.

Religion	Percent
Islam	91.7%
Hinduism	6.3%
Christianity	1.50%
Buddhism	0.50%

Culture: Joypurhat is a district of rural or rich folk culture. In British Raj period, many festivals such as keerton(কীর্তন), jaree(জারী), palagaan(পালাগান), kabigaan(কবিগান), baul(বাবুল), murshidee(মুর্শিদী), lokgeeti(লোকগীতি), bhaoyaiya(ভাওয়াইয়া), jattra(যাত্রা) etc. was held on various occasion. The district bhaoyaiya song expose. These festivals was sponsored by the wealthy and overload men. After 1971, many cultural organizations established in this district level and upazila level. Now-a-days even the different obstacles and constraints, the Cultural Activities is running well.

Climate: Joypurhat is a district of Tropical climate. In Winter there is much more rainfall in Joypurhat than in Summer. According to The Köppen climate classification, The average annual temperature in here is 25.4°C and The average annual rainfall is 1738 mm. The driest month is December with 3 mm. Most Precipitation falls in July, with an average of 364 mm. The

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warmest month of the year is August with an average temperature of 28.9°C. In January, the average Temperature is 18°C. It is the lowest average temperature of the whole year.

Main Crops: Paddy, Sugarcane, Jute, Turmeric, Banana, Potato, Mango, Jack fruit, Pulses, Yam, Betel Leaf, Tobacco, Oil seeds etc.

Tourist Places in Joypurhat District: Khasmohol Bhaban, Ber Amla Bershibaloy, Pitarer Banglo, Joypurhat Sugar mills, Cement Factory, Pachbibir Mazar, Nandail Lake, Ashranga Lake, Bastob Puri, Graveyard of Mukshid Gazi, Pagla Dewan Mass Graveyard, Gopinathpur Temple, Shisu Uddyan, Nandail Lake, Ashranga Lake, Joypal Rajar Rajbari, Baro Shibmondir, Shrine of Pathorghata, Abul Quashem Field in Sadar, Central Shahid Minar, Joypurhat Cadette College, English Market etc.

Joypurhat Sadar Upazila

Education:Joypurhat Girl's Cadet College is the second girl's cadet college of Bangladesh. Joypurhat Government College is the highest educational institute in the district. The college is situated near the Joypurhat rail station which was established in 1963. Joypurhat R.B, Govt. High School is the highest level school in the district. The high school was established in 1946 by Ramdeo Bajla. The school is located on the main road. The informal name of this school is "Bajla school". This school gained national recognition in 1977. Joypurhat Govt. Girl's High School is one of the famous schools in the district. It was established in 1960 and nationalized in the year of 1977. The school boasts a 100% passing rate in both Junior and Secondary School Certificate examinations.

Population Total 256691; male 134054, female 122637; Muslim 225622, Hindu 28921, Buddhist 1134, Christian 77 and others 937. Indigenous communities such as santal, munda, oraon belong to this upazila.

Literacy rate and educational institutions : Average literacy 52.3%; male 56.9%, female 47.3%. Educational institutions: college 7, technical college 3, secondary school 58, technical school 1, primary school 91, madrasa 39. Noted educational institutions: Joypurhat Government College (1972), Joypurhat Government Women's College (1972), Joypurhat Girls' Cadet College (2006), Khanjanpur High School (1901), Khanjanpur Mission Girl's High School

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(1911), Uchai Jerka Adivasi High School (1925), Teghar High School (1940), Ramdeo Bajla Government High School (1946), Joypurhat Government Girls' High School (1977) etc.

Joypurhat Sadar Upazila area 252.18 sq km, located in between 25°01' and 25°13' north latitudes and in between 88°55' and 89°10' east longitudes. It is bounded by panchbibi upazila and west bengal state of India on the north, khetlal, akkelpur and badalgachhiupazilas on the south, kalai and Khetlal upazilas on the east, dhamoirhat upazila and West Bengal state of India on the west.

Religious institutions: Mosque 637, temple 46, church 8, tomb 2, sacred place 1. Noted religious institutions: Kaitahar Mosque (Joypurhat Sadar), Central Jami Mosque (Joypurhat Sadar), tomb of Nangapir, tomb of Shahdat Awolia, Baro Shivalaya Mandir (1700 AD, Belamla), Parbati Mandir (Bhadsa), Khanjanpur church mission (1898, Khanjanpur).

Main sources of income : Agriculture 61.42%, non-agricultural labourer 2.31%, industry 1.18%, commerce 13.62%, transport and communication 5.13%, service 8.71%, construction 1.70%, religious service 0.15% and others 5.78%.

Main crops: Paddy, jute, wheat, potato, sugarcane, mustard, vegetables.



Chapter two

Methodology

Methodology

2.1 Study Area

Joypurhat Sadar Upazila area 252.18 sq km, located in between 25°01′ and 25°13′ north latitudes and in between 88°55′ and 89°10′ east longitudes. It is bounded by panchbibi upazila and west bengal state of India on the north, khetlal, akkelpur and badalgachhiupazilas on the south, kalai and Khetlal upazilas on the east, dhamoirhat upazila and West Bengal state of India on the west. Main occupation of this area agriculture 61.42%, non-agricultural labourer 2.31%, industry 1.18%, commerce 13.62%, transport and communication 5.13%, service 8.71%, construction 1.70%, religious service 0.15% and others 5.78%.

2.2. Method & procedure

In order to document the utilization of medicinal plants, survey was carried out Joypurhat Sadar Upazila Joypurhat district of Bangladesh from early October 2014 to late November 2014. So as to get maximum information and also to cross check the information provided by the local informants during the earlier visits. From each of the seven villages, 30 households & 6 Kabirajes were selected randomly for the comprehensive study. Before the household survey, casual field visits were arranged within the villages with local old people, religious leaders, and other key informants to review and document the availability of medicinal plants in the locality. Informal meetings were held in the interviewee's home using the native language (Bengali). After, the interviews, collected information was cross-checked by the local herbal practitioners locally referred to as kabiraj. They had sound knowledge on medicinal plants and were therefore highly rated in the society. The plant species used for medicine were firstly identified by local names by the help of kabiraj and old-aged persons. The village had no adjacent forest areas all plant specimen were collected from follow land, roadsides, nearby Horticulture, Mayabon nersury which situated west part of Joypurhat Sadar town. Plant specimen were photographed, collected, dried & brought back for complete identification at the Bangladesh National Herbarium center at Dhaka. The scientific names were obtained by consulting the literature.

2.3. Labeling & processing primarily:

Every specimen should be labeled with masking tape with its respective collection number. All sample of the same collection should be carefully bundled & gently pushed to the bottom of collection bag. Delicate plants parts as well as loose material should be placed separately in labeled bags.

Necessary precaution added:

Do not any plant part projecting out of the newspaper, these will break off when dry, parts that may not stay flat can be held in place dry strips of newspaper that is taped to the paper & not the plant.

Chapter Three

Plants Profiles and Description

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Medicinal plants commonly used in this area

SI.No.	Local Name	Scientific Name	Family Name	Identification No.
1	Gritokumari	<i>Aloe vera L.</i>	Liliaceae	41597
2	Kalokeshi	<i>Eclipta alba</i>	Asteraceae	41608
3	Arjun	<i>Terminalia arjuna</i>	Combretaceae	41595
4	Ashok	<i>Saraca asoca</i>	Fabaceae	41600
5	Bador lathi	<i>Cassia fistula L.</i>	Fabaceae	41603
6	Bahera	<i>Terminalia bellirica</i>	Combretaceae	41598
7	Aparajita	<i>Clitoria ternatea L.</i>	Fabaceae	41609
8	Dochunti	<i>Ageratum conyzoides L.</i>	Asteraceae	41610
9	Gai khura	<i>Amaranthus viridis L.</i>	Amaranthaceae	41605
10	Har boksha	<i>Justicia adhatoda L.</i>	Acanthaceae	41602
11	Harjora	<i>Cissus quadrangularis L.</i>	Vitaceae	41596
12	Holud polash	<i>Butea monosperma L.</i>	Fabaceae	41594
13	Kata khura	<i>Amaranthus spinosus L.</i>	Amaranthaceae	41606
14	Kellar boi	<i>Cyperus rotundus</i>	Cyperaceae	41607
15	Nagessar	<i>Mesua ferrea L.</i>	Calophyllaceae	41604
16	Pathokuchi	<i>Bryophyllum daigremontianum</i>	Crassulaceae	41591
17	Sotomuli	<i>Asparagus racemosus L.</i>	Asparagaceae	41599
18	Thankuni	<i>Centella asiatica</i>	Apiaceae	41593
19	Tulsi	<i>Ocimum tenuiflorum L.</i>	Lamiaceae	41592
20	Ulotkombal	<i>Abroma augustum L.</i>	Malvaceae	41601

Plants Profiles and Description

3.1. *Aloe vera* L.

Local Name: Gritokumari

Scientific Name: *Aloe vera* L.

Family Name: Liliaceae

Accession Number: 41597

Parts Used: Dried juice of leaves, fresh juice, pulp, root.

Scientific classification

Kingdom: Plantae

Clade: Magnoliophyta

Clade: Liliopsida

Order: Liliales

Family: Liliaceae

Genus: *Aloe*

Species: *A. vera*



Botanical Description: Aloe vera is a stemless or very short-stemmed succulent plant growing to 60–100 cm (24–39 in) tall, spreading by offsets. The leaves are thick and fleshy, green to grey-green, with some varieties showing white flecks on their upper and lower stem surfaces. The margin of the leaf is serrated and has small white teeth. The flowers are produced in summer on a spike up to 90 cm (35 in) tall, each flower being pendulous, with a yellow tubular corolla 2–3 cm (0.8–1.2 in) long.

Traditional Uses: Aloe vera is used in traditional medicine as a multipurpose skin treatment. Its Juice is useful in loss of appetite, ascites, tumour, liver and spleen enlargement and abdominal colic. Pure Aloe vera juice reduces fatigue, sweating, pain of gout, weakness, restlessness etc.

Pharmacological activity: Fresh juice is cooling and cathartic. Plant is stomachic purgative, emmanogogue, and antihelmentic. Dried juice is cathartic. Pulp is used in menstrual suppression and root in colic. It is purgative, cholagogue, anti-inflammatory, alterative, tonic, and antihelmentic. It acts as a protective layer on the skin and helps in replenishing its moisture. It is the best remedy for the maintenance of the digestion and liver functions. Aloe vera powder can be applied on small wounds. It is laxative, antifatulent and useful in purification of blood and affections of liver. Its Juice can be used in the eyes for conjunctivitis. It has also antidiabetic properties.

Chemical Constituents: The plant consists of low molecular weight phenolic and chromone components of the latex exudate and glycoproteins. These compounds were identified to be 8-C-glycosyl-7-O-methyl-(S)-aloesol, isoaloesin D, and aloeresin E, respectively. Others are: aloesin, 2'-O-feruloyl aloesin, aloeresin-A, barbaloin, isobarbaloin, aloenin, aloe-emodin and compound 1, 2, 3. Also contains uronic acid, oxidase, catalase and sugars.

3.2. *Eclipta alba*

Local Name: Kalokeshi

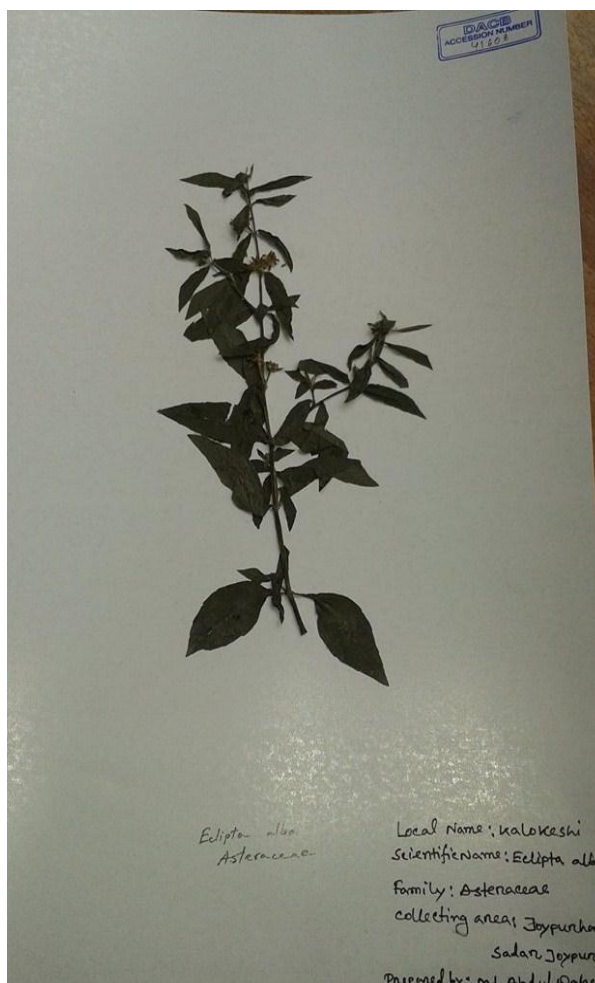
Scientific Name: *Eclipta alba*

Family Name: Asteraceae

Accession Number: 41608

Parts Used: Herb, roots, leaves

Scientific classification	
Kingdom:	Plantae
(unranked):	Angiosperms
(unranked):	Eudicots
(unranked):	Asterids
Order:	Asterales
Family:	Asteraceae
Genus:	<i>Eclipta</i>
Species:	<i>E.alba</i>



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Botanical Description: A slender, diffuse or suberect herb; stem and branches strigose with appressed white hairs. Leaves sessile, 2.5-7.5 cm long, oblong-lanceolate, subentire, acute, sparsely strigose with appressed hairs on both sides. Heads 6-8 mm diam., solitary or 2 together on unequal axillary peduncles; ray-flowers ligulate, white.

Traditional Uses: The plant has traditional uses in Ayurveda. It is bitter, hot, sharp, dry in taste. It is reported to improve hair growth and color.

Pharmacological activity: Plant is tonic, antipyretic, stomachic, anthelmintic, pectoral, anti-asthmatic and expectorant; cures inflammations, hernias, eye diseases, bronchitis, asthma, leucoderma, anaemia, itching, night blindness; improves the colour of the hair and promote growth. It is also used as a tonic and deobstruent in hepatic and splenic enlargements, loss of appetite, acidity and heart burn. The fresh juice of the leaves is rubbed on the shaven scalp for promoting hair growth and resist hairfall.

It is also used for jaundice, fevers, sores, skin diseases, elephantiasis and checking haemorrhages and fluxes and strengthening the gums. Pounded leaves mixed with cold water are drunk to cure constipation. Leaf paste is applied over boils to heal by the Chakma tribe. The roots are given to relieve the scalding of urine. Plant is useful in liver and gall-bladder ailments. Powder of the plant cure patients suffering from infective hepatitis. Aqueous extract of leaf is myocardial depressant and hypotensive.

Chemical constituents: The plant contains an alkaloid, ecliptine. Leaves have been reported to contain saponins, including α -terthienylmethanol, β -amyrin, wedelolactone, demethyl wedelolactone, its 7-O-glucoside, triterpene glycosides, stigmasterol and a small amount of 2-formyl-terthienyl. Aerial parts of Egyptian plant contain β -amyrin, wedelactone, luteolin-7-glucoside, phytosterol A, its glucoside and glycoside of a triterpenic acid. A furanoid diterpene, columbin, has been isolated from the plant. (Ghani, 2003). Sixteen new biologically close related polyacetylenic thiophenes (I-XVI) have also been isolated from this plant.

3.3. *Terminalia arjuna*

Local Name: Arjun

Scientific Name: *Terminalia arjuna*

Family Name: Combretaceae

Accession Number: 41595

Parts Used: Bark

Scientific classification:

Kingdom: Plantae

Division: Angiosperms

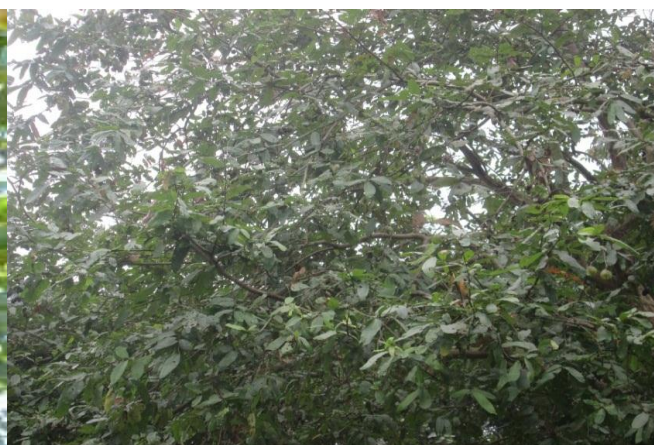
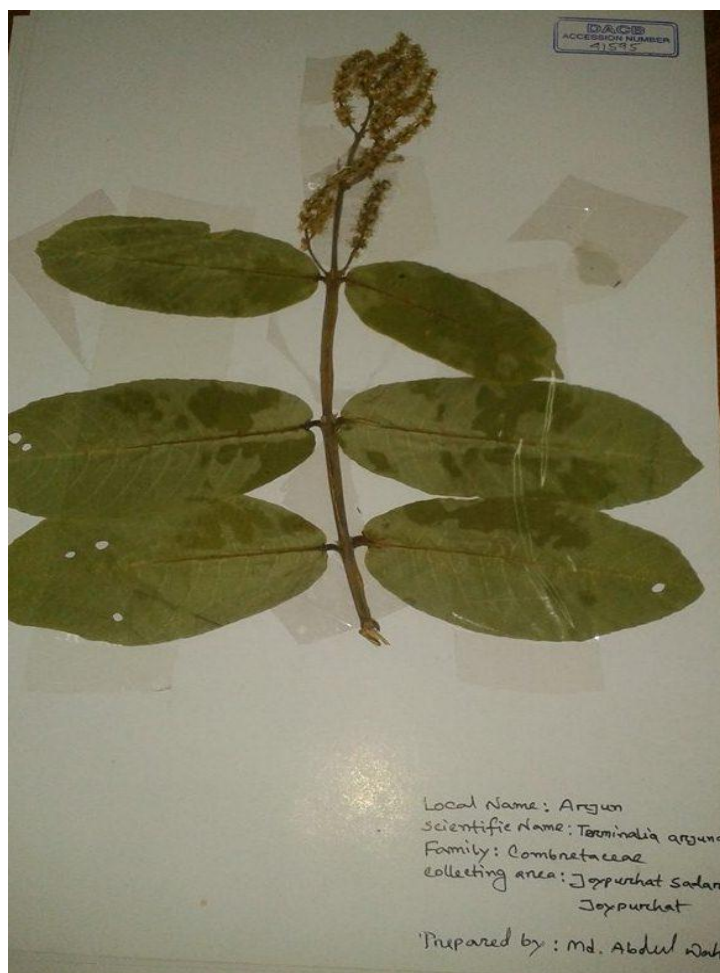
Class: Eudicots

Order: Myrtales

Family: Combretaceae

Genus: Terminalia

Species: *T. arjuna*



Ethnobotanical Survey on Joypurhat Sadar region of Joypurhat District of Bangladesh

Botanical Description: The arjuna is about 20–25 metres tall; usually has a buttressed trunk, and forms a wide canopy at the crown, from which branches drop downwards. It has oblong, conical leaves which are green on the top and brown below; smooth, grey bark; it has pale yellow flowers which appear between March and June; its glabrous, 2.5 to 5 cm fibrous woody fruit, divided into five wings, appears between September and November.

Traditional Uses: Hemorrhages, diarrhea, dysentery, edema, skin problems, and fractures. In addition, it has been found to have antibacterial and antimutagenic properties.

Pharmacological activity: The bark of the arjuna tree contains calcium salts, magnesium salts, tannins, and saponin glycosides which may be the primary source for arjuna's beneficial effects on the heart. People today use *Terminalia arjuna* for disorders of the heart and blood vessels (cardiovascular disease), including heart disease and related chest pain, high blood pressure, and high cholesterol. It is also used as “a water pill,” and for earaches, dysentery, sexually transmitted diseases (STDs), diseases of the urinary tract, and to increase sexual desire. *Terminalia bellerica* and *Terminalia chebula* are both used for high cholesterol and digestive disorders, including both diarrhea and constipation, and indigestion. They have also been used for HIV infection. *Terminalia bellerica* is used to protect the liver and to treat respiratory conditions, including respiratory tract infections, cough, and sore throat. *Terminalia chebula* is used for dysentery.

Chemical Constituents: *Terminalia arjuna* bark has triterpene glycosides, termiarjunoside I and termiarjunoside II, arjunetoside, together with oleanolic, arjunolic and arjunic acids, and a cardenolide. Arjunolic acid, a triterpene and a potent extract and protects the heart from necrosis in rats. Arjunolic acid treatment prevents the decrease in the levels of powerful antioxidants such as superoxide dismutase, catalase, glutathione, alpha-tocopherol, and ascorbic acid. Other chemical evaluations have found 18,19-secooleanane-type triterpene glycosyl esters, namely arjunasides A-E, along with ursane type triterpene glucosyl esters.

3.4. *Saraca asoca*

Local Name: Ashok

Scientific Name: *Saraca asoca*

Family Name: Fabaceae

Accession Number: 41600

Parts Used: Bark, Stem & Flowers

Scientific classification	
Kingdom:	Plantae
Division:	Angiosperms
Class:	Eudicots
Sub-class:	Rosids
Order:	Fabales
Family:	Fabaceae
Genus:	<i>Saraca</i>
Species:	<i>S. asoca</i>



Ethnobotanical Survey on Joypurhat Sadar region of Joypurhat District of Bangladesh

Botanical Description: The ashoka is a rain-forest tree. Its original distribution was in the central areas of the Deccan plateau, as well as the middle section of the Western Ghats in the western coastal zone of the Indian subcontinent. The ashoka is prized for its beautiful foliage and fragrant flowers. It is a handsome, small, erect evergreen tree, with deep green leaves growing in dense clusters. Its flowering season is around February to April. The ashoka flowers come in heavy, lush bunches. They are bright orange-yellow in color, turning red before wilting. Leaves are narrowly lanceolate 15.25 cms long cork like at the base and with a short petiole. Stipules are intra-petiolar and completely united. Flowers are fragrant. They are 7.5-10 cms across. Calyx is yellow to orange and finally red. Its stamens are 7 to 8.

Traditional Uses: Fluid extract of Ashoka flowers is used to treat hemorrhagic dysentery. This fluid is prepared by grinding its flowers with water. The extract is taken in the doses of 15 to 60 drops. Bark of the tree is used for cure of internal piles. Decoction prepared from bark is used to cure piles.

Pharmacological activity: Dried flowers of Ashoka are used for diabetes treatment. The bark of the tree is used for enhancing complexion. Ashoka is used to prepare Ayurvedic tonics to purify blood. The leaves and bark are used to get rid of worms in stomach. The bark of the tree is used to cure excessive loss of blood during menstruation in presence of leucorrhoea, uterine fibroids and other reasons. The bark is taken as a decoction and used as a substitute for a dried fungus, Ergot used to cure the uterine hemorrhages. It is also used to treat in Joint pains, Menorrhagia, leucorrhoea and dysmenorrhoea. It is used as spasmogenic, oxytocic, uterotonic, anti-bacterial, anti-implantation, anti-tumour, anti-progestational, antiestrogenic activity against menorrhagia and anti-cancer.

Chemical Constituents: *Saraca asoca* is reported to contain glycoside, flavanoids, tannins and saponins. The flower part of plant contains Oleic, linoleic, palmitic and stearic acids, P-sitosterol, quercetin, kaempferol- 3-O-P-D- glucoside, quercetin- 3-O-P-D-glucoside, apigenin- 7-O-p-D-glucoside, pelargonidin- 3, 5- diglucoside, cyanidin-3, 5-diglucoside, palmitic, stearic, linolenic, linoleic, p and y sitosterols, leucocyanidin and gallic acid. The bark contains catechol, sterol, and organic calcium compounds.

3.5. *Cassia fistula* L.

Local Name: Bador lathi

Scientific Name: *Cassia fistula* L.

Family Name: Fabaceae

Accession Number: 41603

Parts Used: Fruit, Bark, Leave

Scientific classification

Kingdom: Plantae

Division: Angiosperms

Class: Eudicots

Order: Fabales

Family: Fabaceae

Genus: Cassia

Species: *C. fistula*



Ethnobotanical Survey on Joypurhat Sadar region of Joypurhat District of Bangladesh

Botanical Description: The golden shower tree is a medium-sized tree, growing to 10–20 m (33–66 ft) tall with fast growth. The leaves are deciduous, 15–60 cm (5.9–23.6 in) long, and pinnate with three to eight pairs of leaflets, each leaflet 7–21 cm (2.8–8.3 in) long and 4–9 cm (1.6–3.5 in) broad. The flowers are produced in pendulous racemes 20–40 cm (7.9–15.7 in) long, each flower 4–7 cm (1.6–2.8 in) diameter with five yellow petals of equal size and shape. The fruit is a legume, 30–60 cm (12–24 in) long and 1.5–2.5 centimetres (0.59–0.98 in) broad, with a pungent odor and containing several seeds.

Traditional Uses: The root is prescribed as a tonic, astringent, febrifuge and strong purgative. The leaves extract reduced mutagenicity in *E. coli*. Extract of the root bark with alcohol can be used for backwart fever. The leaves are laxative and used externally as emollient, a poultice is used for chilblains, in insect bites, swelling, rheumatism and facial paralysis. Leaves possess anti-periodic and laxative properties, the leaves are used in jaundice, piles, rheumatism ulcers and also externally skin eruptions, ring worms, eczema. The leaves and bark mixed with oil are applied to pustules, insect bites. The roots are used in chest pain, joint pain, migraine and blood dysentery.

Pharmacological activity: The fruit pulp is considered a purgative and self-medication. Antitussive activity was comparable with that of codeine phosphate, a prototype Antitussive activity. It has CNS activities, Antioxidant activity, Laxative activity, Anti-inflammatory activity, Wound healing activity, Antifungal activity, Larvicidal and ovicidal activity, Antibacterial Activity, Antitumor activity.

Chemical Constituents: The plant is rich in carbohydrates, Linoleic, Oleic, and Stearic. Leaf of *Cassia fistula* mainly contains Oxalic Acids, Tannins, Oxyanthraquinones, Anthraquinones Derivatives. Fruit of *Cassia fistula* contains Rhein Glycosides, Fistulic Acids, Sennosides A B, Anthraquinones, Flavanoid-3-ol-derivatives. Ceryl Alcohol, Kaempferol, Bianthraquinone Glycosides, Fistulin, Essential Oils, Volatile Components, Phytol (16.1%), 2-Hexadecanone (12%), Crystals, 4-Hydroxy Benzoic Acids Hydrate have been reported from the plant.

3.6. *Terminalia bellirica*

Local Name: Bahera

Scientific Name: *Terminalia bellirica*

Family Name: Combretaceae

Accession Number: 41598

Parts Used: Fruits

Scientific classification:

Kingdom: Plantae

Dvision: Angiosperms

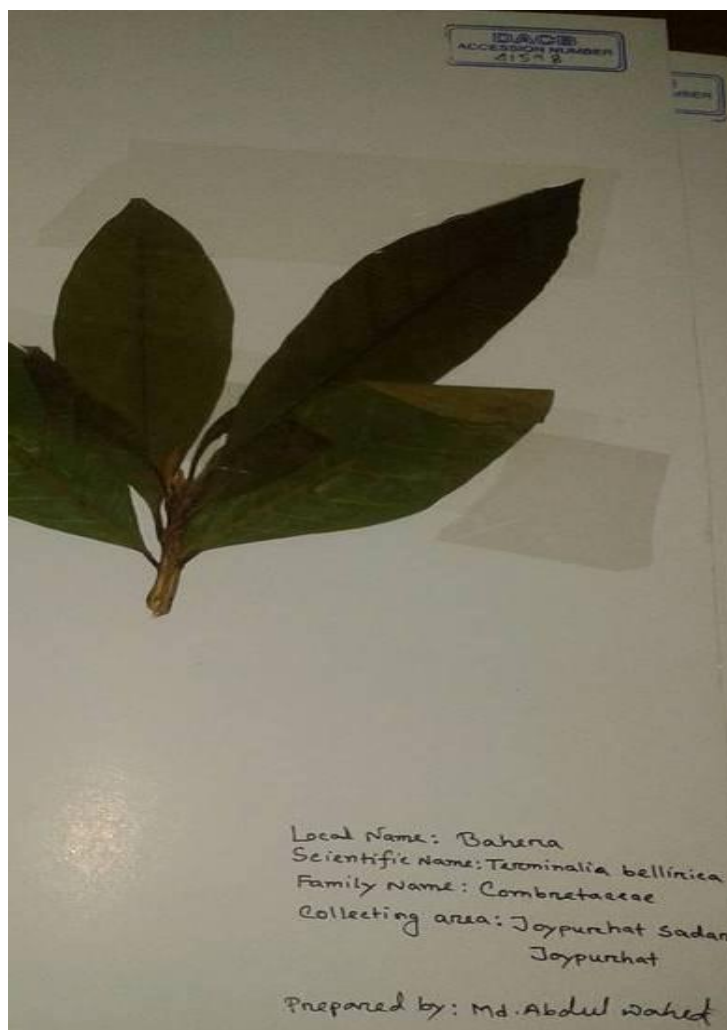
Class: Eudicots

Order: Myrtales

Family: Combretaceae

Genus: Terminalia

Species: *T. bellirica*



Botanical Description: Bahera is a large deciduous tree found throughout India, in areas up to an altitude of 1,000 meters. The tree takes a height of 30 meters, while the bark is brownish grey in color. The alternate, broadly elliptic leaves are clustered towards the end of the branches. They are 10 to 12 cm in length and 7 to 14 cm in breadth. The simple, solitary flowers are in auxiliary spikes, with offensive odor. They blossom in the month of May. The fruits are ovoid grey drupes and the kernels are sweet, but narcotic. The tree is found in abundance in Madhya Pradesh, Uttar Pradesh, Punjab and Maharashtra. It is known as vibhitaki, karshaphala and kalidruma in Sanskrit.

Traditional Uses: The fruit of the plant is used as a laxative and anthelmintic. It is used as a purgative, due to the presence of oil with properties similar to those of castor oil, mixed with honey. It is used to treat dropsy, piles, diarrhoea and leprosy. Bahera fruit powder is analgesic, anti-inflammatory, haemostatic and gives black colour to skin and hair.

Pharmacological activity: Bahera is a rejuvenative and laxative. It proves beneficial for hair, throat and eyes. Bahera seed oil or fruit paste is applied on swollen and painful parts. The seed oil gives excellent results in skin diseases and premature graying of hair. Fruit pieces are baked and chewed for cough, cold, and asthma. The paste of the fruit is applied on eyelids, in case of conjunctivitis. The herb is used in various eye ailments, such as myopia, corneal opacity, pterigium, immature cataract, chronic and acute infective conditions. Beleric helps in loss of appetite, flatulence, thirst, piles and worms. The ripened fruit acts as an astringent and anti-diarrheal. The decoction of the kernels is used in case of excessive thirst and vomiting. It helps in lowering cholesterol and blood pressure.

Chemical Constituents: The plant contains sitosterol, gallic acid, ellagic acid, chebulagic acid, galloyl glucose, fatty acid, protein, oxalic acid, tannin, palmitic acid, oleic acid, linoleic acid, galactose, glucose, ethyl gallate.

3.7. *Clitoria ternatea* L.

Local Name: Aparajita

Scientific Name: *Clitoria ternatea* L.

Family: Fabaceae

Accession Number: 41609

Parts Used: Roots, Seeds & Leaves

Scientific classification

Kingdom: Plantae

(unranked): Angiosperms

(unranked): Eudicots

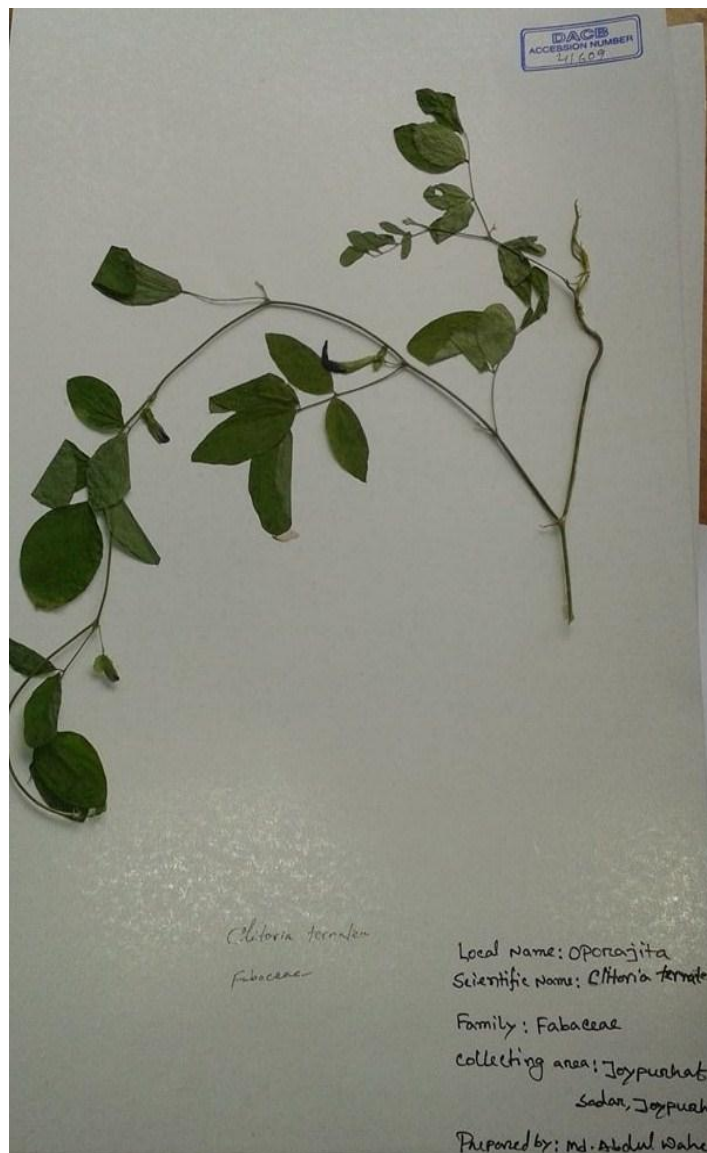
(unranked): Rosids

Order: Fabales

Family: Fabaceae

Genus: *Clitoria*

Species: *C. ternatea*



Ethnobotanical Survey on Joypurhat Sadar region of Joypurhat District of Bangladesh

Botanical Description: It is a perennial herbaceous plant, with elliptic, obtuse leaves. It grows as a vine or creeper, doing well in moist, neutral soil. The most striking feature about this plant are its vivid deep blue flowers; solitary, with light yellow markings. They are about 4 cm long by 3 cm wide. There are some varieties that yield white flowers. The fruits are 5 – 7 cm long, flat pods with 6 to 10 seeds in each pod. They are edible when tender.

Traditional Uses: It was used traditionally in an attempt to treat sexual ailments, like infertility and gonorrhoea, to control menstrual discharge, and also as an aphrodisiac. In traditional Ayurvedic medicine, it has been used for centuries as a memory enhancer, nootropic, antistress, anxiolytic, antidepressant, anticonvulsant, tranquilizing and sedative agent.

Pharmacological activity: Its extracts possess a wide range of pharmacological activities including antimicrobial, antipyretic, anti-inflammatory, analgesic, diuretic, local anesthetic, antidiabetic, insecticidal, blood platelet aggregation-inhibiting and for use as a vascular smooth muscle relaxing properties. Its also used included-Cough, Cold and Asthma, Wounds, Small Pox, Brain Power.

Chemical constituents: It contains glycosides, flavonol glycosides and resin glycosides. Three flavonol glycosides are 3-O-(2''-O- α -rhamnosyl-6''-O-malonyl)- β -glucoside, 3-O-(2''-O- α -rhamnosyl-6''-O-malonyl)- β -glucoside, and a 3-O-(2'',6''-di-O- α -rhamnosyl)- β -glucoside together with eleven known flavonol glycosides were present in the petals of *Clitoria ternatea*. Crude protein and crude fibre in the leaves were 21.5% & 21.5-29% respectively. Total plant protein ranges from 14-20%, squalene-4-ene-3, 6, diene, roots contains taxaxerol and taxaxerone. The leaves contains 3-O-rhamnosylgalactoside of kaempferol, delphinidin-3,5-diglucoside, delphinidin- β -glucoside, and its 3 methyl derivative, kaempferol and cynodan chloride seeds contains myricetin 3-O-rhamnosylrutinoside; kaempferol 3-O-rhamnosylrutinoside; quercetin-3-rutinoside; quercetin-3-glucoside; myricetin-3-glucoside. The root bark contains starch, tannin and resin. The seeds contain a fixed oil, a bitter acid resin (the active principle), tannic acid, glucose (a light brown resin) and ash.

3.8. *Ageratum conyzoides* L.

Local Name: Dochunti

Scientific Name: *Ageratum conyzoides* L.

Family Name: Asteraceae

Accession Number: 41610

Parts Used: The whole plant

Scientific classification

Kingdom: Plantae

(unranked): Angiosperms

(unranked): Eudicots

(unranked): Asterids

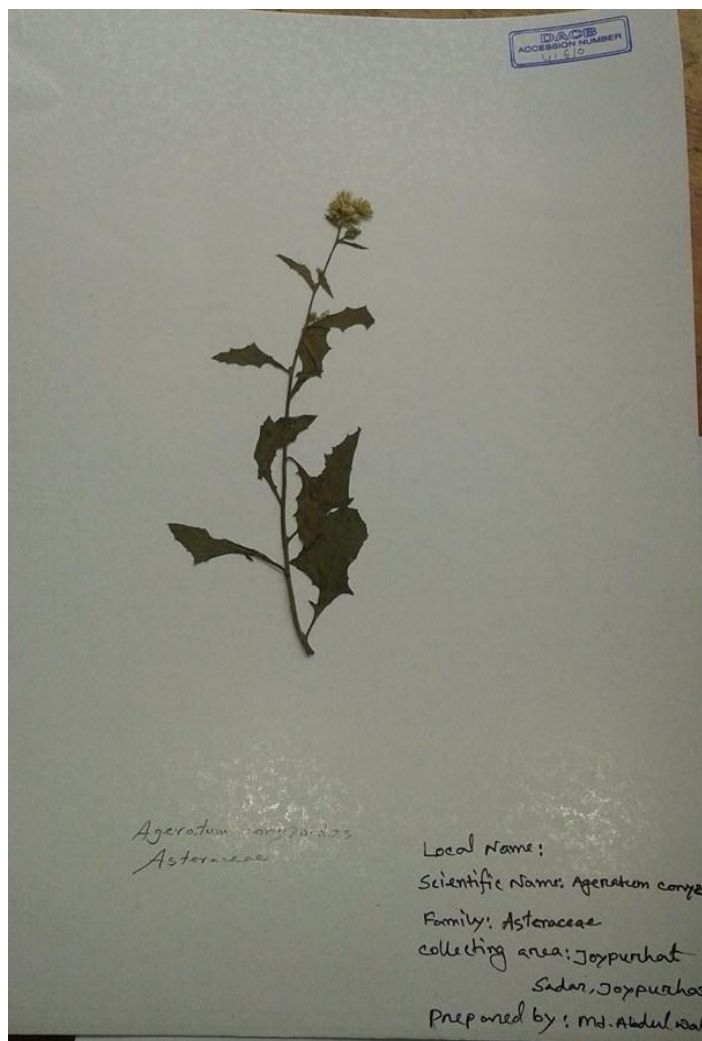
Order: Asterales

Family: Asteraceae

Tribe: Eupatorieae

Genus: *Ageratum*

Species: *A. conyzoides*



Botanical Description: *Ageratum conyzoides* slightly aromatic, annual herb with shallow, fibrous roots, an erect & branching. It grows to approximately 1 m in height. The stems and leaves are covered with fine white hairs; the leaves are egg-shaped with broad end at base (ovate) up to 7.5 cm long. The flowers are purple, blue, pinkish or white, less than 6 mm across, with around 30 to 50 flowers and arranged in close terminal flower-heads. The fruits are small brown one-seeded achenes fruits.

Traditional Uses: The juice of the fresh plant, or an extract of the dried plant, is used in the treatment of allergic rhinitis and sinusitis. The juice of the fresh plant is also useful in treating post-partum uterine haemorrhage.

Pharmacological activity: The whole plant is anti-inflammatory and anti-allergic. The leaves and stems are used in skin diseases. Roots are antilithic. Roots and leaves are considered antidiarrheal. A herb widely used by traditional medicine men for wound healing, is shown to exhibit antibacterial activity against *Staphylococcus aureus*. Extracts and metabolites from this plant have been found to possess pharmacological and insecticidal activities.

Chemical Constituents: *Ageratum* contains many bioactive compounds including flavonoids, alkaloids, coumarins, essential oils, chromenes, benzofurans, terpenoids and tannins. The main plant chemical found in the plant include: 6,7-dimethoxy-2,2-dimethylchromene, 6-demethoxyageratochromene, 6-vinyl-demethoxy-ageratochromene, ageratochromene, alpha-cubebene, alpha-pinene, alpha-terpinene, beta-caryophyllene, beta-cubebene, beta-elemene, beta-farnesene, beta-myrcene, beta-pinene, beta-selinene, beta-sitosterol, cadinene, caryophyllene-oxide, conyzorigin, coumarin, dotriacontene, endo-borneol, endo-bornyl-acetate, ethyl-eugenol, ethyl-vanillin, farnesol, friedelin, HCN, hexadecenoic-acid, kaempferol, kaempferol-3,7-diglucoside, kaempferol-3-o-rhamnosylglucoside, linoleic-acid, quercetin, quercetin-3,7-diglucoside, and quercetin-3-o-rhamnosylglucoside.

3.9. *Amaranthus viridis* L.

Local Name: Gai Khura

Scientific Name: *Amaranthus viridis* L.

Family Name: Amaranthaceae

Accession Number: 41605

Parts Used: Leaves, Root, Stem

Scientific classification

Kingdom: Plantae

Division: Angiosperms

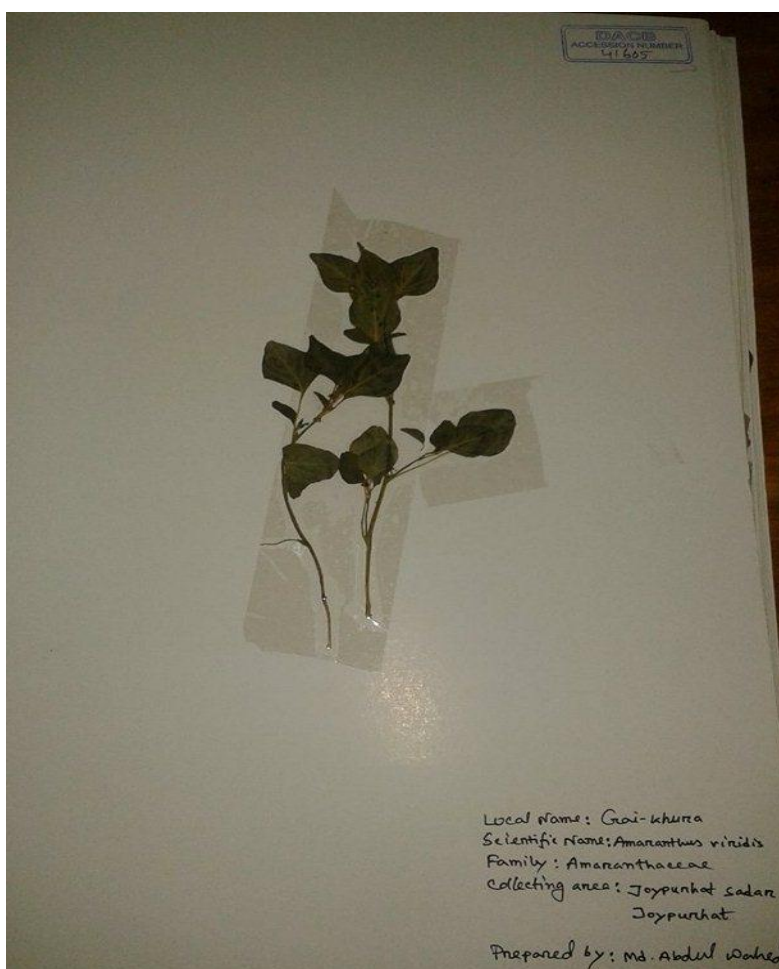
Class: Eudicots

Order: Caryophyllales

Family: Amaranthaceae

Genus: *Amaranthus*

Species: *A. viridis*



Ethnobotanical Survey on Joypurhat Sadar region of Joypurhat District of Bangladesh

Botanical Description: Erect or ascending annual or short-lived perennial herb up to 1 m tall; stem slender, branched, angular, glabrous to sparsely pubescent in upper part with multicellular hairs. Leaves alternate, simple; petiole up to 10 cm long; blade deltoid-ovate to rhomboid-oblong, 2–8 cm × 1.5–6 cm, base shortly cuneate, apex emarginate with small mucro, margin sometimes sinuate, glabrous to pubescent. Inflorescence consisting of agglomerated cymes arranged in slender, axillary or mostly terminal spikes, frequently paniculate, up to 12 cm long, in the lower part of the stem often in dense axillary clusters c. 7 mm in diameter. Flowers unisexual, subsessile, green, male and female intermixed but female ones more numerous; bracts and bracteoles lanceolate-ovate, c. 1 mm long, whitish-membranous; tepals 3, oblong to obovate, 1–1.5 mm long, midrib often thickened above, bent along the fruit; male flowers with 3 stamens; female flowers with superior, 1-celled ovary crowned by 2–3 short stigmas. Fruit a subglobose capsule, c. 1.5 mm in diameter, not or slightly exceeding the perianth, indehiscent, usually strongly wrinkled, 1-seeded. Seed subglobose, slightly compressed, c. 1 mm in diameter, margin acute, glossy black, verrucose or with inconspicuous sculpture. The plant is self-fertile.

Traditional Uses: Traditionally the plant used as vegetables.

Pharmacological activity: The leaves are diuretic and purgative, and are used in poultices (fresh or as dried powder) to treat inflammations, boils and abscesses, gonorrhoea, orchitis and haemorrhoids. The whole plant is used to purify the blood and the pounded root is applied against dysentery. Leaf sap is used as an eye wash to treat eye infections and for treating convulsions and epilepsy in children. The plant act as a vermifuge, being effective against filaria, as an emmenagogue and to relieve heart troubles. The leaves are believed to have febrifugal properties. It is also taken to treat constipation.

Chemical Constituents: 100g of leaves contains 283 calories, 34.2g protein, 5.3g fat, 44.1g carbohydrate, 6.6g fibre, 16.4g ash, 2243mg calcium, 500mg phosphorus, 27mg iron, 336mg sodium, 2910mg potassium, 50mg vitamin A, 0.07mg thiamine, 2.43mg riboflavin, 11.8mg niacin and 790mg ascorbic acid. The seed contains 14 - 16% protein and 4.7 - 7% fat.

3.10. *Justicia adhatoda* L.

Local Name: Har-baksha

Scientific Name: *Justicia adhatoda*

Family Name: Acanthaceae

Accession Number: 41602

Parts Used: Leaves

Scientific classification:

Kingdom: Plantae

Division: Angiosperms

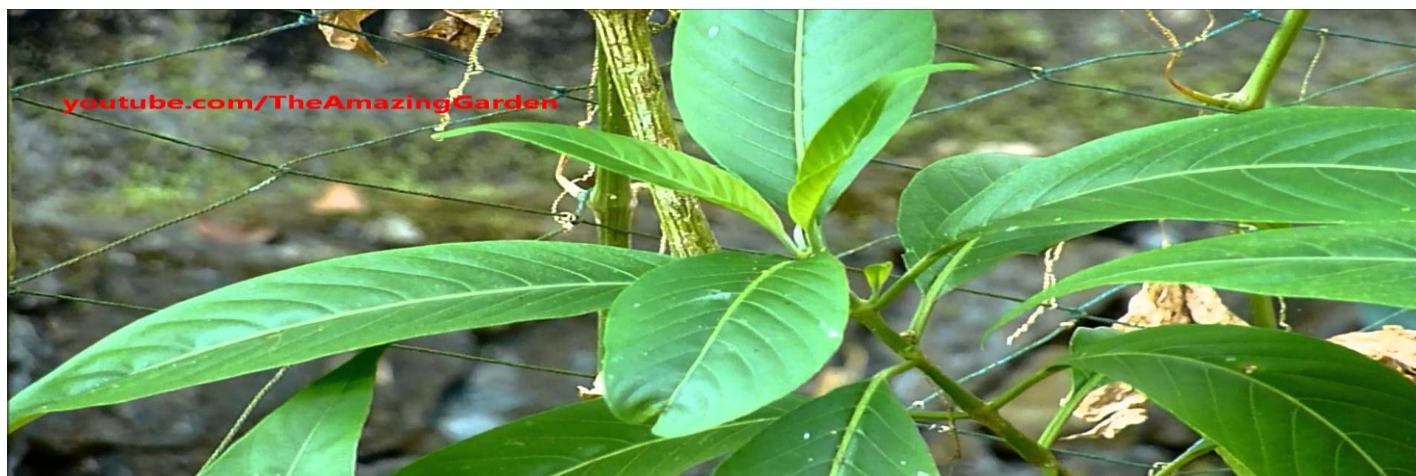
Class: Eudicots

Order: Lamiales

Family: Acanthaceae

Genus: *Justicia*

Species: *J. adhatoda*



Botanical description: *J. adhatoda* is a shrub with lance-shaped leaves 10 to 15 centimeters in length by four wide. They are oppositely arranged, smooth-edged, and borne on short petioles. When dry they are of a dull brownish-green colour. They are bitter-tasting. When a leaf is cleared with chloral hydrate and examined microscopically the oval stomata can be seen. They are surrounded by two crescent-shaped cells at right angles to the ostiole. Trunk has many, long, opposite, ascending branches, where the bark is yellowish in color. Flowers are usually white and the inflorescence shows large, dense, axillary spikes. Fruits are pubescent, and are with club-shaped capsules.

Traditional uses: It is used as an herbal remedy for treating cold, cough, whooping cough and chronic bronchitis and asthma, as sedative expectorant, antispasmodic and anthelmintic. It is also known for its antiarthritis, antiseptic, antimicrobial, expectorant, sedative and anti-tuberculosis properties. Leaf juice is used in malarial fever.

Pharmacological activity: Both the alkaloids in combination (1:1) showed pronounced bronchodilatory activity in vivo and in vitro. Both alkaloids are also respiratory stimulants. Vasicine, the active compound, has been compared to theophylline both in vitro and in vivo. Another, vasicinone, showed bronchodilatory activity in vitro, but bronchoconstrictory activity in vivo. Vasicine has a cardiac-depressant effect, while vasicinone is a weak cardiac stimulant; the effect can be normalized by combining the alkaloids. Vasicine is reported to have a uterine stimulant effect. Vasicinone was shown to have an antianaphylactic action.

Chemical Constituents: Several alkaloids are present in the leaves. The most important is vasicine, a quinazoline alkaloid. The vasicine yield of the herbage has been measured as 0.541 to 1.1% by dry weight.

3.11. *Cissus quadrangularis* L.

Local Name: Harjora

Scientific Name: *Cissus quadrangularis* L.

Family Name: Vitaceae

Accession Number: 41596

Parts Used: Stems.

Scientific classification

Kingdom: Plantae

Division: Angiosperms

Class: Eudicots

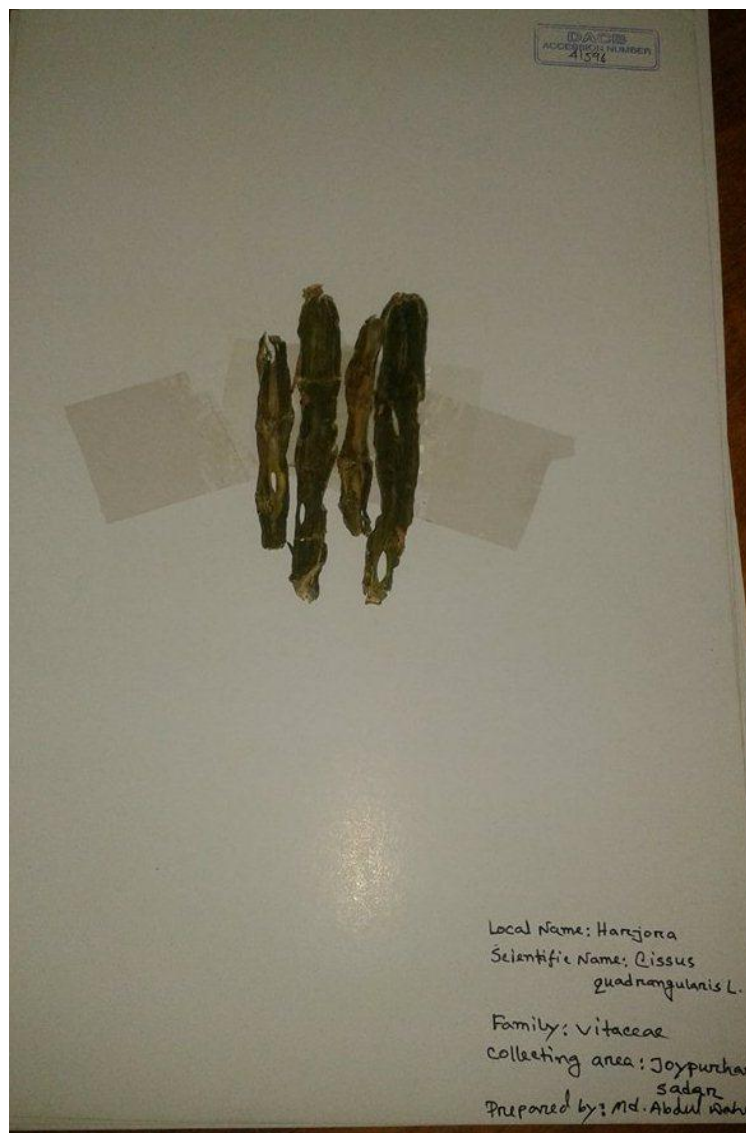
Clade: Rosids

Order: Vitales

Family: Vitaceae

Genus: *Cissus*

Species: *C. quadrangularis*



Botanical Description: *Cissus quadrangularis* reaches a height of 1.5 m and has quadrangular-sectioned branches with internodes 8 to 10 cm long and 1.2 to 1.5 cm wide. Along each angle is a leathery edge. Toothed trilobe leaves 2 to 5 cm wide appear at the nodes. Each has a tendril emerging from the opposite side of the node. Racemes of small white, yellowish, or greenish flowers; globular berries are red when ripe.

Traditional Uses: *Cissus quadrangularis* has been used as a medicinal plant since antiquity. Traditionally the plant used for the treatment of gastritis, bone fractures, skin infections, constipations, eye diseases, piles, anemia, asthma, irregular menstruation, burns and wounds. A paste of stem is useful for muscular pains. It is also used as a powerful stomachic.

Pharmacological activity: Vasicine, the active compound, has been compared to theophylline both in vitro and in vivo. Another, vasicinone, showed bronchodilatory activity in vitro, but bronchoconstrictory activity in vivo. The plant has potent fracture healing property and also has an antimicrobial, antiulcer, antioxidative, antifungal, anti-inflammatory, anthelmintic, antihemorrhoidal, analgesic antiosteoporotic, gastroprotective, cholinergic activities as well as beneficial effects on cardiovascular diseases.

Chemical Constituents: The plant contains triterpenes including α - and β - amyrins, β -sitosterol, ketosteroids, phenols, tannins, carotene and vitamin C. Seven alicyclic lipids constituents have also been reported from *Cissus quadrangularis*. Several unsymmetric tetracyclic triterpenoids such as d-amyrin, onocer-7-ene-3a, 21b-diol, d-amyrone and 3,3',4,4'-tetra hydroxyl biphenyl, 3,3',4,4'-tetrahydroxybiphenyl have been isolated from plant and were quantitatively determined by HPTLC and HPLC methods. Several other constituents such as flavonoids quercetin and kaempferol, and stilbene derivatives, quadrangularins A,B,C and many others e.g. resveratrol, piceatanon, pallidol, perthenocissi and phyto sterols have been isolated from plant. Stem extract contains a high percentage of calcium ions and phosphorus, both essential for bone growth.

3.12. *Butea monosperma* L.

Local Name: Holud polash

Scientific Name: *Butea monosperma*

Family Name: Fabaceae

Accession Number: 41594

Parts Used: Leaves, seeds & flowers.

Scientific classification

Kingdom: Plantae

Division: Angiosperms

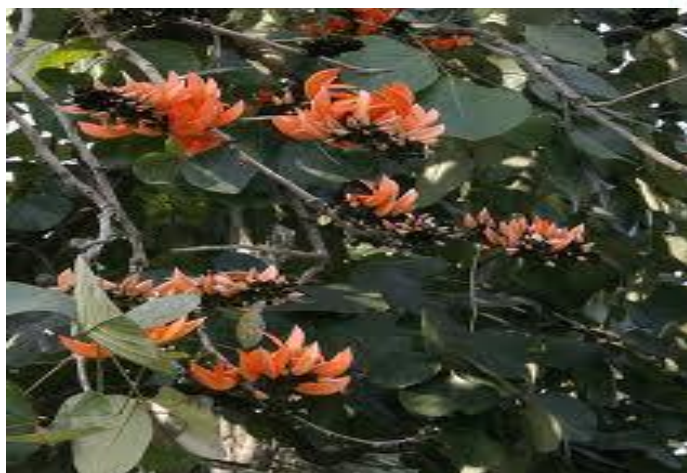
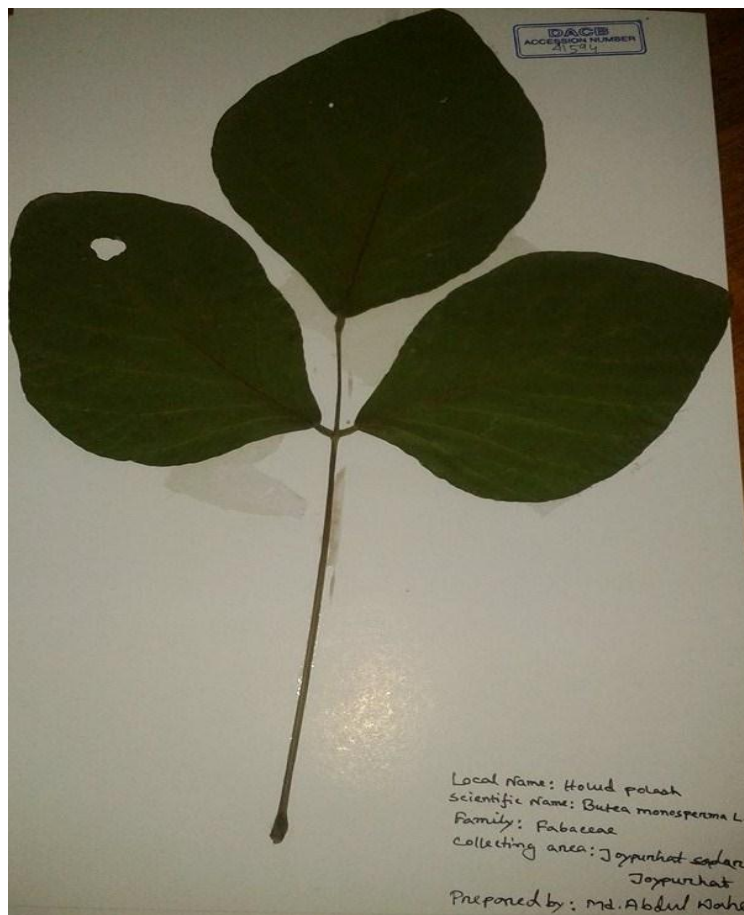
Class: Eudicots

Order: Fabales

Family: Fabaceae

Genus: *Butea*

Species: *B. monosperma*



and greenish white in colour, soft and weighs about 14 to 15 kg per cubic foot. The bark is ash color. The leaves are compound, with three leaflets. The bark is ash colour. The leaves have 3 foliate, large and stipulate, 10-15 cm long petiole. Leaflets are obtuse, glabrous above finely silky and conspicuously reticulately veined beneath with cuneate. The fruit of palas is a flat legume. Pods are stalked 12.5-20 by 2.5-5 cm, thickened at the sutures. Young pods have a lot of hair, a velvety cover and mature pods hang down. The seeds are flat from 25 to 40 mm long, 15 to 25 mm wide, and 1.5 to 2 mm thick. The seed-coat is reddish-brown in colour, glossy, and wrinkled, and encloses two large, leafy yellowish cotyledons.

Traditional Uses: The plant is highly used by the rural and tribal people in curing various disorders. Flowers are used as drug in many ailments like eye disease, chronic fever, enlargement of spleen, leucorrhoea, epilepsy, leprosy, anti-inflammatory activity, liver disorders and gout etc. The seed is used as anthelmintic.

Pharmacological activity: *Butea Monosperma* tree possess various pharmacological characteristics from its different parts such as leaves, Seeds, Flowers, Bark, Stems, etc. The plant has antidiabetic activity, anticonvulsive activity, antimicrobial, antifungal activity, antiestrogenic and antifertility activity, radical scavenging activities, antitumor activity, wound healing, anti-giardiasis and hepatoprotective, antihypertensive & anti-diarrhoeal activity. *Butea monosperma* is used as tonic, astringent, aphrodisiac and diuretics.

Chemical Constituents: The main constituent of the flower is butrin (1.5%) besides butein (0.37%) and butin (0.04%). Also contains flavonoids and steroids. Other than these in flowers, coreopsin, isocoreopsin, sulphurein (glycoside) and other two with monospermoside and isomonospermoside structures are also identified. Roots contain glucose, glycine, glucosides and aromatic compounds. Tetramers of leucocynidin are isolated from gum and stem bark. Seed contains oil. The bright colour of the flower is attributed to the presence of chalcones and aurones. The plant also contains palasitrin, and major glycosides as Butrin, alanin, allophanic acid, butolic acid, cyanidin, histidine, lupenone, lupeol, (-)-medicarpin, miroestrol, palasimide and shellolic acid. It also contains tannins, mucilaginous material, pyrocatechin.

3.13. *Amaranthus spinosus* L.

Local Name: Kata Khura

Scientific Name: *Amaranthus spinosus* L.

Family Name: Amaranthaceae

Accession Number: 41606

Parts Used: Leaves, Stem, Root

Scientific classification

Kingdom: Plantae

Division: Angiosperms

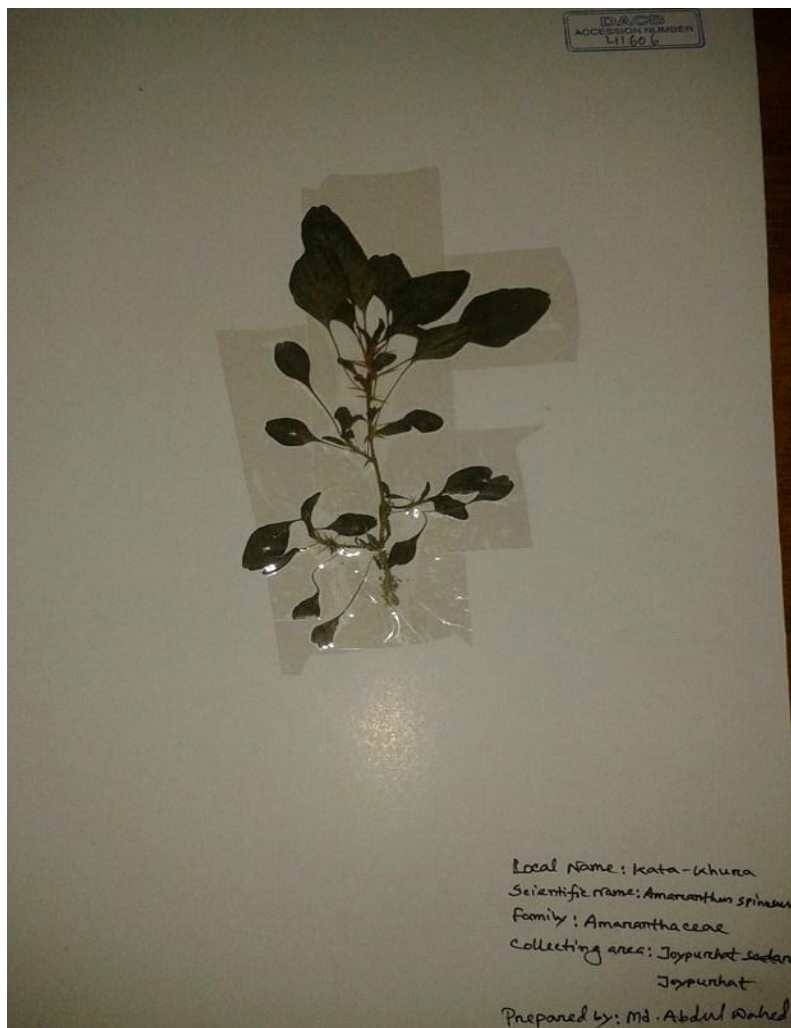
Class: Eudicots

Order: Caryophyllales

Family: Amaranthaceae

Genus: *Amaranthus*

Species: *A. viridis*



Ethnobotanical Survey on Joypurhat Sadar region of Joypurhat District of Bangladesh

Botanical Description: Urai is a stout, erect, smooth, branched herb, 0.4 to 1 meter high. Stems are armed with slender, axillary spines. (The presence of spines differentiate it from kolitis (*Amaranthus viridis*). Leaves are glabrous, long-petioled, oblong to oblong ovate, or elliptic-lanceolate, 4 to 10 centimeters long, obtuse, alternate. Flowers are very numerous, stalkless, green or greening-white, about 1 millimeter long, and borne in dense, axillary clusters and in elongated terminal axillary spikes. Sepals are 5 or 1-3, ovate to linear, often aristate. Petals are scarious. Bracts are linear, bristle-pointed and as long as the sepals or longer. Fruits are utricles, wrinkled, nearly as long as the sepals. Seeds are minute, black and shining.

Traditional Uses: Traditionally the plant, especially the young leaves, can be used as vegetable. Decoction also used as gargle for sore throat.

Pharmacological activity: The roots are used as a laxative, as emollient poultice, as antimalarial, antioxidant, anti-inflammatory, antimicrobial, and antidiuretic agents, and also in hepatic disorders. The water extract of the plant showed significant immunostimulating activity.. It is used internally in the treatment of internal bleeding, diarrhoea and excessive menstruation. It is also used in the treatment of snake bites. Externally, it is used to treat ulcerated mouths, vaginal discharges, nosebleeds and wounds. The plant can be used fresh or it can also be harvested when coming into flower and dried for later use. The root is emmenagogue and galactagogue. A paste of the root is used in the treatment of menorrhagia, gonorrhoea, eczema and colic. It helps to remove pus from boils. The juice of the root is used to treat fevers, urinary troubles, diarrhoea and dysentery. It is also used, often combined with the root juice of *Dichrophela integra* and *Rubus ellipticus*, to treat stomach disorders and, on its own, to treat indigestion and vomiting that occur after eating unusual foods.

Chemical Constituents: Leaf contains anthraquinone derivatives, cardiac glycosides and saponins. It also contains 7-p-coumaroyl apigenin 4-O-beta-D-glucopyranoside, a new coumaroyl flavone glycoside called spinoside, xylofuranoxyl uracil, beta-D-ribofuranosyl adenine, beta-sitosterol glucoside, hydroxycinnamates, quercetin and kaempferol glycosides, betalains, betaxanthin, betacyanin; amaranthine and isoamaranthine, gomphrenin, betanin, b-sitosterol, stigmasterol, linoleic acid, rutin and beta-carotene.

3.14. *Cyperus rotundus*

Local Name: Kellar Boi

Scientific Name: *Cyperus rotundus*

Family Name: Cyperaceae

Accession Number: 41607

Parts Used: Roots, Tuber

Scientific classification:

Kingdom: Plantae

Division: Angiosperms

Class: Monocots

Order: Poales

Family: Cyperaceae

Genus: *Cyperus*

Species: *C. rotundus*



Botanical Description: *Cyperus rotundus* is a perennial plant, that may reach a height of up to 140 cm (55 inches). The names "nut grass" and "nut sedge" – shared with the related species *Cyperus esculentus* – are derived from its tubers, that somewhat resemble nuts, although botanically they have nothing to do with nuts. As in other Cyperaceae, the leaves sprout in ranks of three from the base of the plant, around 5–20 cm long. The flower stems have a triangular cross-section. The flower is bisexual and has three stamina and a three-stigma carpel, with the flower head having 3-8 unequal rays. The fruit is a three-angled achene. The root system of a young plant initially forms white, fleshy rhizomes, up to 25 mm in dimension, in chains.

Traditional Uses: The herb *Cyperus rotundus* L. is used by the traditional medicine practitioners of ayurvedic medicine in India for CNS disorders like loss of memory, depression and epilepsy. The roots & rhizomes of *Cyperus rotundus* L have reported to possess multiple therapeutic action :digestive stimulant,anthelmintic,antisaturative etc.

Pharmacological activity: To maintain regular bowel movement, dysentery, infections Tuber juice is orally administered for dysentery and to maintain regular bowel movements. The roots and tubers are analgesic, antibacterial, antispasmodic, antitussive, aromatic, astringent, carminative, diaphoretic, diuretic, emmenagogue, litholytic, sedative, skin, stimulant, stomachic, tonic and vermifuge.

Chemical Constituents: Different phytochemical studies on *C. rotundus* revealed the presence of alkaloids, flavonoids, tannins, starch, glycosides, furochromones, monoterpenes, sitosterol, a fatty oil containing a neutral waxy substance, glycerol, linolenic, myristic & stearic acid. The major chemical components of this herb are essential oils, flavonoids, sesquiterpenes, cyprotene, cyperene, aselinene, rotundene, valencene, cyperol, gurjunene, trans-calamenene, cadalene, cyperotundone, mustakone, isocyperol, acyperone, etc.

3.15. *Mesua ferrea* L.

Local Name: Nagesar

Scientific Name: *Mesua ferrea* L.

Family Name: Calophyllaceae

Accession Number: 41604

Parts Used: Wood, bark, seeds and flowers

Scientific classification

Kingdom: Plantae

Division: Angiosperms

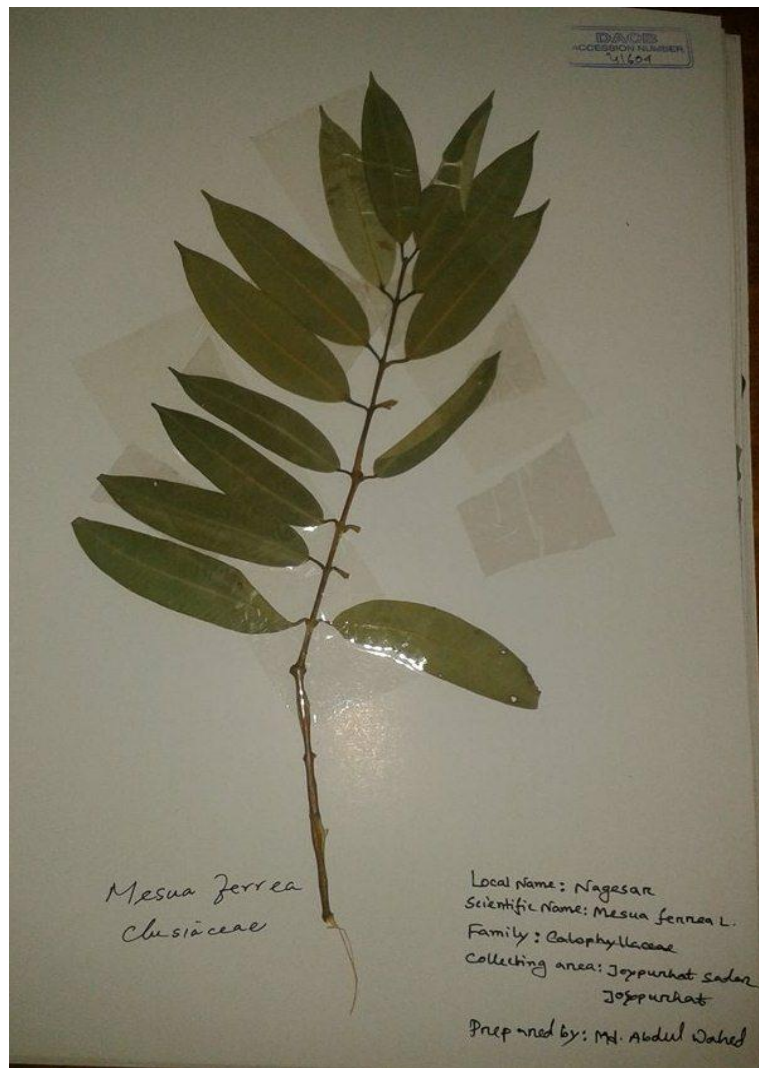
Class: Eudicots

Order: Malpighiales

Family: Calophyllaceae

Genus: *Mesua*

Species: *M. ferrea*



Ethnobotanical Survey on Joypurhat Sadar region of Joypurhat District of Bangladesh

Botanical Description: Mesua is an evergreen tree that grows to height of 20-30 m with erect and upright trunk of about 90cm in diameter, supportive at the base and crown conic. The leaves are pendulous petiole 5-8mm and are blunt reddish brown and drooping when young. The flowers are 4-7.5 cm in diameter consist of four petals and a centre of numerous yellow stamens. The fruit is an ovoid to globose capsule with 1 to 2 seeds.

Traditional Uses: The flowers are fragrant, acrid, anodyne, digestive and useful in stomachache, and constipation. In some countries the extract of flowers are used in perfumes. It helps in aggravates the fairness of skin. The seeds and heartwood contain anti-inflammatory properties.

Pharmacological activity: The leaves are applied to the head in the form of a poultice for severe colds. Oil from the seeds is used for sores, scabies, wounds, and rheumatism. The root of this herb is often used as an antidote for snake poison. The dried flowers are used for bleeding hemorrhoids and dysentery with mucus. Fresh flowers are also prescribed for excessive thirst, excessive perspiration, cough, and for indigestion. The oil from the seeds exhibited antifungal activity against a number of pathogenic fungi and is used as cure for skin ailments. The extracts of the tree are also helpful in treating respiratory disorders like bronchitis. It is also used to treat in irregular uterine bleeding.

Chemical Constituents: Mesuol , Mesuaxanthofle B- and euxanthofle 4- a1kylcoumnu0l MammeiSin ,Mamiflegin & mesuol from seed oil (Phytochem. 1971,10,1131). mesuaferrofle glycoside- cyclohaxodione- mesuaferrol, sitosterol. Octadecatriefloic and hexadecanolic acids are present in seed oil Stamens from the flower of the Ironwood Tree plant contain alpha- and beta-amyrin, beta-sitosterol, biflavonoids, mesuaferrones A and B, and mesuanic acid.

3.16. *Bryophyllum daigremontianum*

Local Name: Pathorkuchi

Scientific Name: *Bryophyllum daigremontianum*

Family Name: Crassulaceae

Accession Number: 41591

Parts Used: Leaves

Scientific classification:

Kingdom: Plantae

Division: Angiosperms

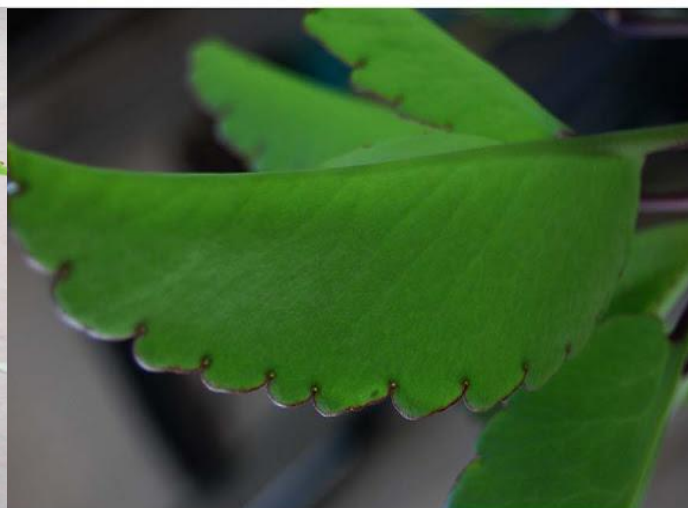
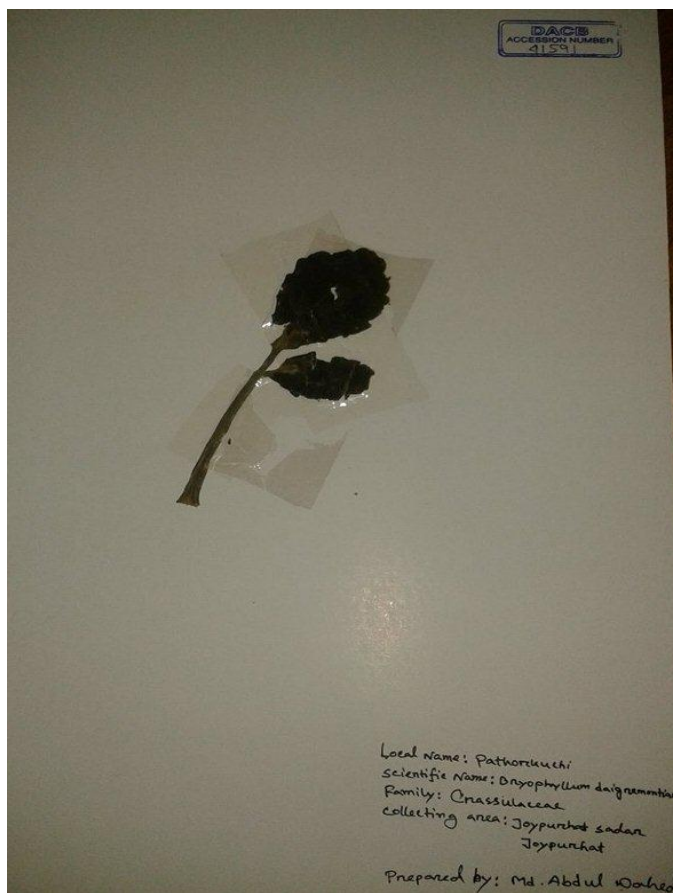
Class: Eudicots

Order: Saxifragales

Family: Crassulaceae

Genus: *Bryophyllum*

Species: *B. daigremontianum*



Ethnobotanical Survey on Joypurhat Sadar region of Joypurhat District of Bangladesh

Botanical Description: Pathorcuchi is a succulent perennial medicinal herb which is found almost throughout India. It is small plant which is also used for ornamental purpose in gardens. Its leaves have mini plants on its margin. Plants reach up to 1 m (3 feet) tall with opposite, fleshy oblong-lanceolate "leaves" that reach 15-20 cm (6-8 inches) long and about 3.2 cm (1.25 inches) wide. Native of Madagascar; introduced and naturalized in many parts of tropical and subtropical Africa, Asia, North America (Florida) and South Africa; cultivated in Pakistan, India and Bangladesh for its medicinal properties. In Bangladesh it is known as Patharkuchi Pata.

Traditional Uses: Used to treat Dysuria, Urinary problems, Jaundice, cholera, Piles and haemorrhoids. Leaves of this plant is very good for removing kidney and multiple small gall bladder stone. Chew leaves (2-3) or extract leaves juice and drink twice a day. Warm leaves of Pathorcuchi and apply at affected area with pain relieving oil.

Pharmacological activity: Kalanchoe Pinnata is used to treat clinical conditions such as infections, arthritis, inflammation, hypertension and kidney stones. Kalanchoe Pinnata leaves has diuretic, wound healing, hepatoprotective, antimicrobial, and anti-inflammatory activities.

Chemical Constituents: Its leaves contain zinc, ascorbic acids, riboflavin, thiamine and niacin, isocitric acid, malic acid, free tartaric acid, alkaloids, calcium oxalate, flavonoids, anthocyanins, tannins.

3.17. *Asparagus racemosus* L.

Local Name: Sotomuli

Scientific Name: *Asparagus racemosus*

Family Name: Asparagaceae

Accession Number: 41599

Parts Used: Roots

Scientific classification:

Kingdom: Plantae

Division: Angiosperms

Class: Monocots

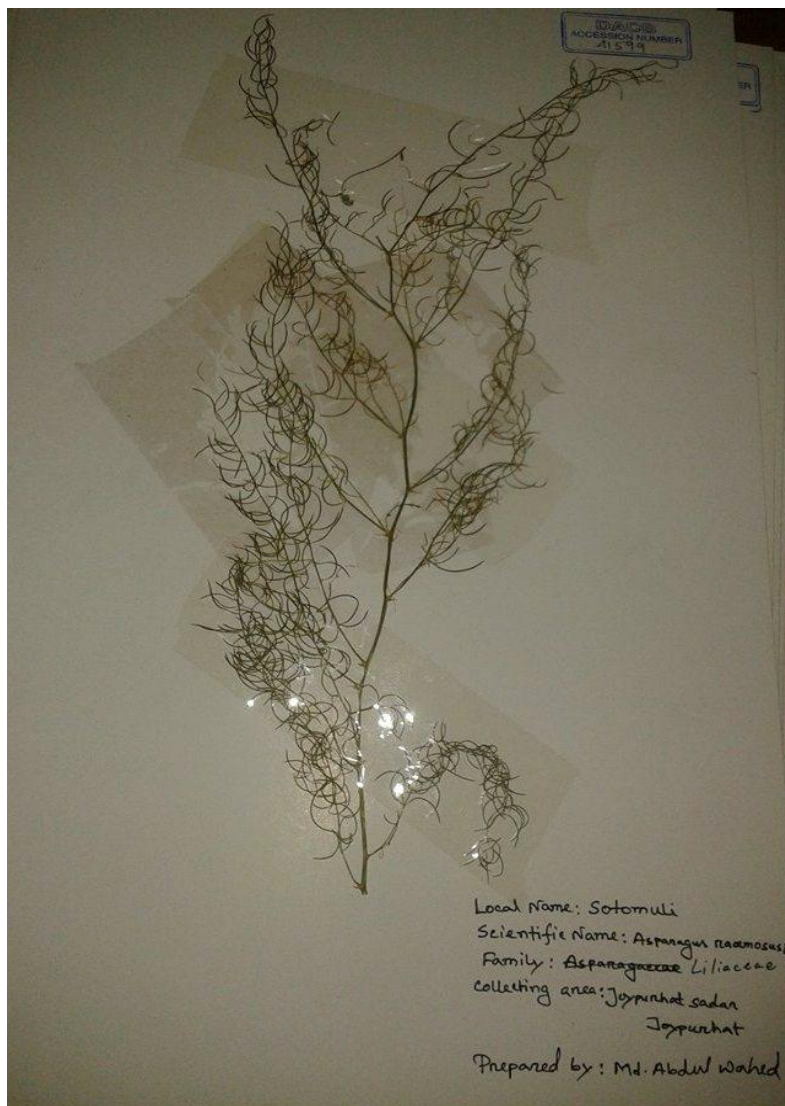
Order: Asparagales

Family: Asparagaceae

Subfamily: Asparagoideae

Genus *Asparagus*

Species: *A. Racemosus*



Botanical Description: Sotomuli plant is a spiny and climbing shrub with a branched, woody stems of whitish- grey or brown in colour. The spines of this medicinal plant are usually of 0.5 cm to 1.3 cm long. Rootstocks are short and tuberous which bear numerous numbers of 30 cm to 100 cm long succulent tuberous roots. Flowers are long up to 5 cm to 15 cm and white in colour. These have a sweet fragrant and appear in a bunch. The fruits or berries of this medicinal plant are globose in structure. The diameter of this fruit varies from 0.4 cm to 0.6 cm in diameter. On maturing, the colour of the fruit becomes red.

Traditional Uses: People generally use this plant for the treatment of diarrhea, convulsion, epilepsy, uterus weakness, gonorrhoea etc.

Pharmacological activity: The Sotomuli plant is important for its medicinal uses. In this medicinal practice, the roots are considered alterative, stomachic, tonic, aphrodisiac and astringent to the bowels. They are used to treat dysentery, tumours, inflammations, biliousness, diseases of the blood and eyes, rheumatism and diseases of the nervous system. Satamuli plants are also important in Unani practice. In this process the roots are used in the treatment of kidney and liver disorders, gleet and gonorrhoea. They are taken to relieve fever by the tribal inhabitants of southern Bihar. In different regions it has different medicinal uses. Such as, in some parts of India the dried, powdered roots of these medicinal plants are used to increase lactation in nursing mothers for the treatment of leucorrhoea, sexual weakness and rheumatism. Whereas in some other parts of India, the fresh root juice is mixed with honey for the disease of dyspepsia in human beings. This medicinal plant is also used for the treatment of menorrhagia disease.

Chemical Constituents: Asparagamine A, a polycyclic alkaloid was isolated from the dried roots and subsequently synthesized to allow for the construction of analogs. Two new steroidal saponins, shatavaroside A and shatavaroside B together with a known saponin, filiasparoside C, were isolated from the roots of *Asparagus racemosus*. Five steroidal saponins, shatavarins VI-X, together with five known saponins, shatavarin I (or asparoside B), shatavarin IV (or asparinin B), shatavarin V, immunoside and schidigerasaponin D5 (or asparanin A), have been isolated from the roots of *Asparagus racemosus*. It also contains mucilage & starch.

3.18. *Centella asiatica*

Local Name: Thankuni

Scientific Name: *Centella asiatica*

Family Name: Apiaceae

Accession Number: 41593

Parts Used: The whole plant

Scientific classification

Kingdom: Plantae

(unranked): Angiosperms

(unranked): Eudicots

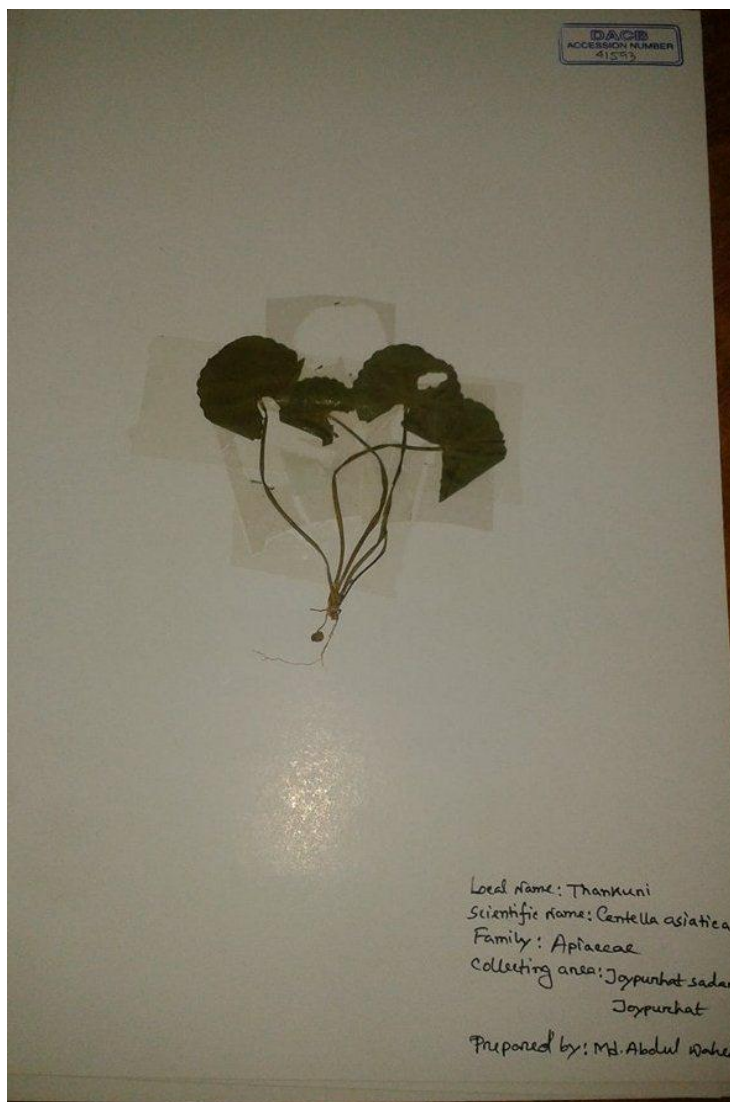
(unranked): Asterids

Order: Apiales

Family: Apiaceae

Genus: *Centella*

Species: *C. asiatica*



Botanical Description: Centella grows in tropical swampy areas. The stems are slender, creeping stolons, green to reddish-green in color, connecting plants to each other. It has long-stalked, green, rounded apices which have smooth texture with palmately netted veins. The leaves are borne on pericladial petioles, around 2 cm. The rootstock consists of rhizomes, growing vertically down. They are creamish in color and covered with root hairs. The flowers are white or pinkish to red in color, born in small, rounded bunches (umbels) near the surface of the soil. Each flower is partly enclosed in two green bracts. The hermaphrodite flowers are minute in size (less than 3 mm), with 5-6 corolla lobes per flower. Each flower bears five stamens and two styles.

Traditional Uses: In Ayurvedic medicine it has been used for healing wounds, as a mild diuretic, for increasing concentration and alertness, as well as an anti-anxiety and anti-stress medicament. Centella asiatica may help protect against skin cancer caused by exposure to ultraviolet radiation.

Pharmacological activity: In Ayurvedic medicine it has been used for healing wounds, as a mild diuretic, for increasing concentration and alertness, as well as an anti-anxiety and anti-stress medicament. It has been used for the treatment of leprosy, bronchitis, asthma, syphilis and wound healing. It has been used by the traditional healers for wound healing, better circulation, memory enhancement, cancer treatment, increasing vitality, as a general tonic, treatment of respiratory ailments, for detoxifying the body, treatment of skin disorders (such as psoriasis and eczema), burn and scar treatment, clearing up skin infections, slimming and edema, for arthritis and rheumatism, treatment of liver and kidneys. This leaf very useful for stomach disease.

Chemical Constituents: Flavonoids, glycosides, saponin glycosides, triterpenoids.

3.19. *Ocimum tenuiflorum* L.

Local Name: Tulsi

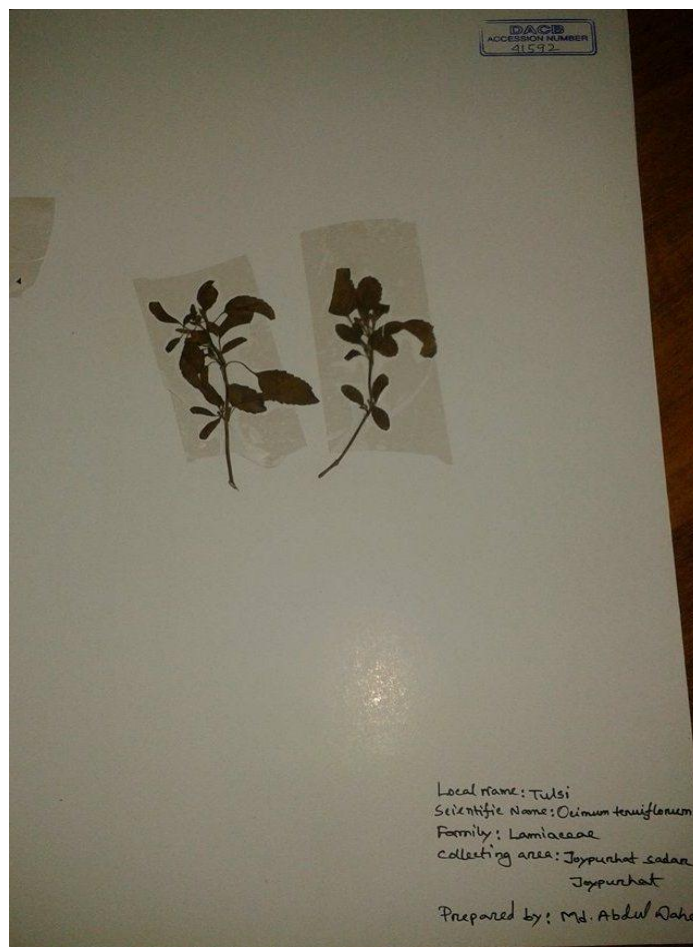
Scientific Name: *Ocimum tenuiflorum* L.

Family Name: Lamiaceae

Accession Number: 41592

Parts Used: Leaves, Stems.

Scientific classification	
Kingdom:	Plantae
Clade:	Asterids
Order:	Lamiales
Family:	Lamiaceae
Genus:	<i>Ocimum</i>
Species:	<i>O. tenuiflorum</i>



Botanical Description: *Ocimum tenuiflorum*, also known as *Ocimum sanctum*, holy basil, or tulasī, is an aromatic plant in the family Lamiaceae which is native to the Indian Subcontinent and widespread as a cultivated plant throughout the Southeast Asian tropics. It is an erect, many branched subshrub, 30–60 cm tall with hairy stems and simple opposite green or purple leaves that are strongly scented. Leaves have petioles and are ovate, up to 5 cm long, usually slightly toothed. The flowers are purplish in elongate racemes in close whorls. The two main morphotypes cultivated in India and Nepal are green-leaved and purple-leaved.

Traditional Uses: Tulsi has many traditional health uses, including treatment of eczema, psoriasis and aging effects. Chewing tulsi leaves relieves cold and flu. It helps to mobilize mucus in bronchitis and asthma. It is also used as an antibiotic, an immune system booster, an anti-inflammatory and a stress reducer. In its native India, tulsi is considered a sacred plant and no household would dare be without the plant,

Pharmacological activity: Tulsi has very potent germicidal, fungicidal, anti-bacterial and anti-biotic properties that are great for resolving fevers. It has the potential to cure any fever right from those caused due to common infections to those caused due to malaria as well. Leaves of holy basil are packed with antioxidants and essential oils that produce eugenol, methyl eugenol and caryophyllene. Collectively these substances help the pancreatic beta cells (cells that store and release insulin) function properly. This in turn helps increase sensitivity to insulin. Lowering one's blood sugar and treating diabetes effectively. It helps soothe the nerves, regulates blood circulation and beats free radicals that are produced during an episode of stress. To relieve kidney stones one must have the juice of tulsi leaves with honey, every day for six months to help wash out the stone from the kidney. With strong anti-oxidant and anti-carcinogenic properties tulsi has been found to help stop the progression of breast cancer and oral cancer. Tulsi has immunomodulatory, antitussive and expectorant properties that make it a great relief for coughs, cold, and other respiratory disorders including chronic and acute bronchitis.

Chemical Constituents: A variety of biologically active compounds have been isolated from the leaves including ursolic acid, apigenin and luteolin. Results demonstrated that the oil was found to be rich in phenyl derivative compounds (83.8%). The major compound was identified as methyl eugenol (82.9%) among twenty-six compounds, comprising 98.9% of the total oil.

3.20. *Abroma augustum* L.

Local Name: Ulotkambal

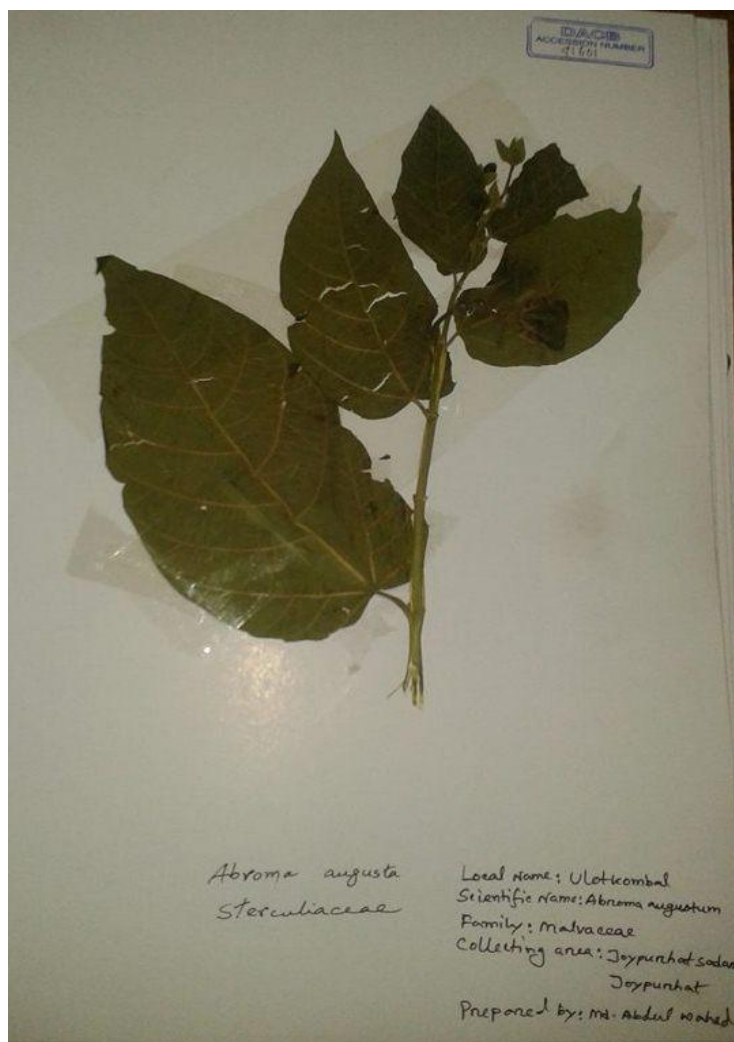
Scientific Name: *Abroma augustum* L.

Family Name: Malvaceae

Accession Number: 41601

Parts Used: Bark, Roots & Stems.

Scientific classification	
Kingdom:	Plantae
Division:	Angiosperms
Class:	Eudicots
Sub-class:	Rosids
Order:	Malvales
Family:	Malvaceae
Genus:	Abroma
Species:	<i>A. augustum</i>



Botanical Description: Devil's Cotton is a shrub or a small tree which reaches height of 1.8 to 3.6 m. Although plant can grow up to height of 9 m in wild. The plant propagates through seeds and stem cuttings. The plant has small hairs that can cause dermatitis. This shrub requires fertile soil with good drainage and well distributed rainfall. The flowers are about 5 cm in diameter. These are dark red, purple or yellow in colour. The Seeds are many, small, blackish, covered with silky hairs

Traditional Uses: Seed yields fatty oil, rich in linoleic acid and lowers cholesterol level in blood. Used to control mind, different ailments of head, heart, eyes, ears, nose, face, mouth, throat, stomach, abdomen, urinary organs, male and female sexual organs, respiratory organs, neck, back and limbs, skin diseases, fever; to regulate appetite and sleep.

Pharmacological activity: Leaves & stems are demulcent, root bark is an emmenagogue. The plant has effective results in the treatment of diseases related to head, heart, eyes, ears, nose, face, mouth, throat, stomach, abdomen, urinary organs, male and female sexual organs, respiratory organs, neck, back and limbs, skin diseases, fever and to regulate appetite and sleep. The bark is useful as uterine tonic and emmenagogue. It helps in regulation of menstrual flow in females. The root and the bark of the plant is quite beneficial for the treatment of congestive and neuralgic forms of dysmenorrhoea, amenorrhoea, urinary trouble, bronchitis, broncho-pneumonia and carbuncles. The leaves are quite effective in treating diabetes, rheumatic pain and sinusitis.

Chemical Constituents: Whole plant has yielded alkaloids and secondary metabolites including steroids, triterpenes, flavonoids, megastimanes, benzohydrofurans, and glycosides, and phenylethanoid glycosides. Root contains a fixed oil, resins, an alkaloid in minute quantity (0.01%), and water soluble bases. Study of roots yielded some alkaloid bases, reducing sugars and some phytosterols. Study reported a large amount of magnesium salts in combination with hydroxy acids, gums, resins and other organic residues.

CHAPTER FOUR

Results And Discussion

4.1. Results And Discussion

A total 20 wild medicinal plants belonging to 14 families were collected. Medicinal plants used against like heart disease , stomachic purgative, emmanogogue, antihelmentic, acidity, baldness,chicken-pox, common cough and cold, constipation, chronic headache, chronic fever, darkness before the eyes, discharge of albumin, dryness in the body,diabetes,dysentery,gout,hairLoss,edema,haemorrhoids,rheumatism,hysteria,Indigestion, itching on the body,eruptions,jaundice, dysentery, sexually transmitted diseases (STDs) like gonorrhea, diseases of the urinary tract, respiratory diseases, wound healing activity. Additionally the Kavirajes treated two disesse conditions,which they termed as meho & promeho.It appeared that both are urinary problems,but while meho seemed to arise from endrocrinological disorders like disbetes,promeho denoted urinary problems arising from sexually transmitted disease like gonorrhea.Meho & promeho are frequently referred disease by the Kavirajes of Bangladesh.

Percentage of various parts used of plant

Plant parts used	Number of plant	Percentage (%)
Leaves	10	50
Roots	8	40
Stems	5	25
Bark	4	20
Whole plant	3	15
Flower	2	10
Fruit	2	10
Wood, tuber	2	10

Among plant parts used for indigenous medicines, leaves were (50%), fruit (10%), root (40%), fruit (10%), whole plant (15%), flower (10%), bark (20%), stems (25%), tuber (5%) and wood (5%). Overall, leaves were most commonly used in the preparations of the healers interviewed, followed by bark and stems. The leaf was the most commonly used plant part while concoction and decoction were the most common method of traditional drug preparation. Most medicinal plants (72%) are harvested from the wild and 45% of these have other non medicinal uses. Several new medicinal uses of plants were also documented.

Apart from a few isolated instances, in most formulations, a single plant was used. However, the plant or various parts from the same plant could be used & administered differently for treatment of diverse ailments. For example first, The root and the bark of *Abroma augustum* L. is quite beneficial for the treatment of congestive and neuralgic forms of dysmenorrhoea, amenorrhoea, urinary trouble.

Centella asiatica plant play important role directly for the treatment of wound healing, better circulation, memory enhancement, cancer treatment, treatment of skin disorders. Juice collected from *Justica adhatoda* leaves used for treating cold, cough, whooping cough and chronic bronchitis and asthma, as seda-tive expectorant, antispasmodic and anthelmintic.

Oil obtained from the seeds of *Mesua ferrea* L. is used for sores, scabies, wounds, and rheumatism. The root of this herb is often used as an antidote for snake poison. The dried flowers are used for bleeding hemorrhoids and dysentery with mucus.

The survey indicated that the common medicinal plant families in the study area are Acanthaceae, Amaranthaceae, Apiaceae, Combretaceae, Euphorbiaceae, Asteraceae, Malvaceae, Calophyllaceae, Cyperaceae, Crassulaceae, Fabaceae, Lamiaceae, Liliaceae, and Vitaceae. A number of the plants used by the Deb barma healer have been scientifically studied, or their use in traditional medicinal systems, particularly Ayurveda, has been described. Taken together the various scientific reports suggest that the plants used by the Kavirajes for the treatment of various diseases merit further scientific studies for their potential in the discovery of new drugs.

Chapter five: Conclusion

The present findings are the first record of ethno-botanical survey of traditional medicine Practice for the treatment of cough, diabetes, diarrhea, dysentery and fever at Joypurhat Sadar Upazilla of Joypurhat District of Bangladesh using standard research protocols. A total of 20 plant species under 14 families have been documented which are used for the treatment of different important human diseases. The present study may be a preliminary contribution to the medicinal knowledge 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 plants may be used for botanical and pharmacological research in future for the development of new sources of drugs.

Chapter six: References

- <http://www.indexmundi.com/bangladesh/>
- <http://en.wikipedia.org/wiki/Bangladesh>
- http://en.wikipedia.org/wiki/History_of_Bangladesh
- http://www.plantsjournal.com/vol1Issue1/Issue_july_2013/11.1.pdf
- <http://www.ethnobiomed.com/content/8/1/47>
- <http://www.ncbi.nlm.nih.gov/pubmed/24120747>
- <http://www.ethnobiomed.com/content/6/1/8>
- <http://map.bdhomepage.com/?q=content/digital-map-joypurhat-sadar-upazila-joypurhat-district>
- http://en.wikipedia.org/wiki/Jaipurhat_District
- <http://priobangla.net/divisions-of-bangladesh/district/joypurhat-13/>
- <http://www.bbs.gov.bd/webtestapplication/userfiles/Image/District%20Statistics/Joypurhat.pdf>
- <http://map.bdhomepage.com/?q=content/joypurhat-district-map-map-joypurhat-district-bangladesh-detail-map>
- <http://aboutbangladesh71.blogspot.com/2013/01/joypurhat-district-bangladesh.html>
- http://en.wikipedia.org/wiki/Joypurhat_Sadar_Upazila
- http://www.banglapedia.org/HT/J_0141.htm
- https://www.google.com.bd/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CCEQFjAA&url=http%3A%2F%2Fen.wikipedia.org%2Fwiki%2FJaipurhat_District&ei=T2urVPaUKMzluQTSt4HwCQ&usg=AFQjCNHumxon_oDGICnrSxNx7J032qmCtg

Ethnobotanical Survey on Joypurhat Sadar region of Joypurhat District of Bangladesh

- <http://bestinfobd.com/joypurhat-district/>
- <http://www.mpbd.info/plants/eclipta-alba.php>
- http://en.wikipedia.org/wiki/Eclipta_prostrata
- <http://www.iloveindia.com/indian-herbs/bhringaraj.html>
- http://en.wikipedia.org/wiki/Terminalia_arjuna
- http://www.anniesremedy.com/herb_detail414.php
- <http://www.webmd.com/vitamins-supplements/ingredientmono-811-terminalia.aspx?activeingredientid=811&activeingredientname=terminalia>
- <http://www.arjunabark.com/>
- <http://www.isangeeta.com/2013/10/aloe-vera-ghrit-kumari-in-sanskrit.html>
- <http://ghritkumari.com/aboutghritkumari.html>
- servedby.myinfotopia.com/tt?id=1050518&size=728x90&referrer=http%3A%2F%2Fghritkumari.com%2Faboutghritkumari.html&cb=27792987
- http://en.wikipedia.org/wiki/Aloe_vera
- http://chandigarh.gov.in/green_herb_kumari.htm
- <http://www.evaidyaji.com/Ayurvedic/Ayurvedic%20Herbs/Aloe-Ghritkumari>
- <http://www.slideshare.net/planet--ayurveda/ghritkumari-saar-aloe-vera-juice-health-benefits-uses>
- <https://sites.google.com/site/medicinalplantshealing/list-of-plants/asoka-tree>
- <http://drgarimasancheti.blogspot.com/2011/07/health-benefits-of-ashoka-saraca-indica.html>
- <http://jocpr.com/first-issue/JOCPR-6.pdf>
- http://ayurveda-foryou.com/ayurveda_herb/ashok.html
- <http://www.home-remedies-for-you.com/herbs/ashoka-herb.html>

- http://en.wikipedia.org/wiki/Saraca_asoca
- <http://www.allayurveda.com/ashoka-herb.asp>
- <http://scholarsresearchlibrary.com/JNPPR-vol1-iss1/JNPPR-2011-1-1-101-118.pdf>
- http://en.wikipedia.org/wiki/Cassia_fistula
- http://en.wikipedia.org/wiki/Terminalia_bellirica
- <http://www.iloveindia.com/indian-herbs/terminalia-belerica.html>
- <http://www.evaidyaji.com/Ayurvedic/Ayurvedic%20Herbs/Bahera>
- http://www.indianetzone.com/38/bahira_plant.htm
- http://en.wikipedia.org/wiki/Justicia_adhatoda
- https://www.academia.edu/6712357/Adhatoda_vasica_Nees_Phytochemical_and_Pharmacological_Profile
- <http://www.sciencedirect.com/science/article/pii/S0378874108004911>
- <http://www.ayurvedicnaturalhomeremedies.com/medicinal-benefits-of-clitoria-ternatea/>
- http://en.wikipedia.org/wiki/Clitoria_ternatea
- <http://pharmacologyonline.silae.it/files/newsletter/2011/vol3/019.deepak.pdf>
- http://www.globinmed.com/index.php?option=com_content&view=article&id=80348:clitoria-ternatea-2&catid=705:c
- <http://www.ijrpc.com/files/19-2180.pdf>
- http://en.wikipedia.org/wiki/Butea_monosperma
- <http://www.pharmatutor.org/articles/butea-monosperma-traditional-medicinal-plant-overview>
- <http://www.ijaiem.org/RATMIG>
2013/ASH%2006%20PLANT%20REVIEW%20PHYTOCHEMICAL%20CONSTITUE

NTS%20AND%20THEIR%20IMPORTANT%20CHARACTERIZATION%20OF%20B
UTEA%20MONOSPERMA%20(PALASH).pd

- <http://www.alwaysayurveda.com/butea-monosperma/>
- <http://www.pfaf.org/user/plant.aspx?LatinName=Amaranthus+viridis>
- http://en.wikipedia.org/wiki/Amaranthus_viridis
- http://database.prota.org/PROTAhtml/Amaranthus%20viridis_En.htm
- <http://www.instructables.com/id/The-Great-Outdoors-In-Search-Of-Medicinal-Plants/step3/Amaranthus-viridis/>
- [http://keys.lucidcentral.org/keys/v3/eafrinet/weeds/key/weeds/Media/Html/Ageratum_conyzoides_\(Billygoat_Weed\).htm](http://keys.lucidcentral.org/keys/v3/eafrinet/weeds/key/weeds/Media/Html/Ageratum_conyzoides_(Billygoat_Weed).htm)
- <http://www.issg.org/database/species/ecology.asp?si=1493>
- <http://www.pfaf.org/user/Plant.aspx?LatinName=Ageratum+conyzoides>
- http://en.wikipedia.org/wiki/Ageratum_conyzoides
- <http://www.mpbd.info/plants/ageratum-conyzoides.php>
- http://en.wikipedia.org/wiki/Asparagus_racemosus
- http://www.indianetzone.com/38/satamuli_plant.htm
- <http://www.ayushveda.com/herbs/asparagus-racemosus.htm#Top>
- <http://www.bimbima.com/health/post/2013/10/17/medicinal-use-of-patharchatta-or-kalanchoe-pinnata.aspx>
- <http://en.wikipedia.org/wiki/Bryophyllum>
- http://www.dr.hauschka.com/en_DE/knowledge-base/medicinal-plant-facts/byrophyllum/
- http://en.wikipedia.org/wiki/Bryophyllum_daigremontianum

- http://en.wikipedia.org/wiki/Cyperus_rotundus
- <http://www.aensiweb.com/old/aejsa/2010/196-203.pdf>
- <http://www.ijarnp.org/index.php/ijarnp/article/view/153>
- <http://www.ijnpnd.com/article.asp?issn=22310738;year=2014;volume=4;issue=1;spage=23;epage=27;aulast=Imam>
- [http://nopr.niscair.res.in/bitstream/123456789/15562/1/IJNPR%203\(4\)%20467-476.pdf](http://nopr.niscair.res.in/bitstream/123456789/15562/1/IJNPR%203(4)%20467-476.pdf)
- <http://www.stuartxchange.com/Uray.html>
- <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3159276/>
- http://en.wikipedia.org/wiki/Amaranthus_spinosus
- <http://www.flowersofindia.net/catalog/slides/Nag%20Kesar.html>
- http://en.wikipedia.org/wiki/Mesua_ferrea
- <http://www.spicesmedicinalherbs.com/mesua-ferrea.html>
- <http://www.frim.gov.my/mesua-ferrea-the-useful-graceful-tree-2/>
- <http://www.himalayawellness.com/herbfinder/mesua-ferrea.htm>
- [http://www.indianmedicinalplants.info/d4/Mesua-ferrea\(Naga-Kesara\).html](http://www.indianmedicinalplants.info/d4/Mesua-ferrea(Naga-Kesara).html)
- http://sphinxsai.com/s_v2_n2/PT_V.2No.2/phamtech_vol2no.2_pdf/PT=51%20_1298-1310_.pdf
- http://en.wikipedia.org/wiki/Cissus_quadrangularis
- <http://www.ijppsjournal.com/Vol3Suppl4/2439.pdf>
- http://en.wikipedia.org/wiki/Centella_asiatica
- <http://www.fhiredekha.com/forum/index.php?topic=172.5;wap2>
- <http://www.foodcooking-inspiration.in/2013/12/thankuni-pata-bata-and-drink.html>
- <http://findmeacure.com/2007/06/06/indian-pennywort/>

- <http://horizonpublishing.com/journals/index.php/PST/article/view/52>
- http://ayurveda-foryou.com/ayurveda_herb/tulsi.html
- <http://www.dnaindia.com/health/report-top-10-health-benefits-of-tulsi-1876745>
- http://en.wikipedia.org/wiki/Ocimum_tenuiflorum
- <http://www.livestrong.com/article/199889-importance-of-the-medicinal-plant-tulsi/>
- <http://hinduism.about.com/od/ayurveda/a/tulsibenefits.htm>
- <http://www.stuartxchange.com/Anabo.html>
- http://en.wikipedia.org/wiki/Abroma_augustum
- <http://www.bimbima.com/health/post/2014/08/29/devils-cotton-treulat-kambal-medicinal-uses.aspx>
- <http://www.mahaashadhi.com/info/ayurveda/medicinalplants/Ulatkambal.html>
- <http://www.tee.org/fileadmin/downloads/Botanische%20Bestandsaufnahme%20indischer%20Heilpflanzen.pdf>
- <http://pubs.sciepub.com/bb/1/2/6/>