

## Research Article



## Ethno-medicinal Uses of Indigenous Tree Species from Mavanatham and Ittarai Villages, Sathyamangalam Reserve Forest Range, Tamil Nadu, India

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### ABSTRACT

The study of local knowledge about natural resources is becoming increasingly important in defining strategies and actions for conservation. India, a country with a rich culture and traditional knowledge, has contributed a major share of the world's ethnobotanical work. The main objective behind this study was to record the plants used for medicinal purposes in Mavanatham and Ittarai through regular field visits. There are no previous reports on the documentation of medicinal plants from Mavanatham and Ittarai villages of Thalimalai Hills. The study was carried out during December 2015 to January 2016 resulted in the identification of 56 elite tree species belonging to 29 different families. Their botanical names, vernacular names, family names, habits, parts used and medicinal uses were identified and documented. The representing plants are mostly used to cure diarrhoea, asthma, stomach problems, wounds, skin diseases, rheumatism, poisonous bites, fever, cancer, diabetes and jaundice. Leaves are the most widely (53.57%) used plant part of the reported medicinal plants, followed by bark (46.42%), roots (26.78%), fruit (25%), stems (17.85%), Whole plant (14.28%), seeds (10.71%), flowers (7.14%) and Gum and latex (1.78%). This study therefore concludes, it is necessary that suitability requirements are needed in order to protect the traditional knowledge in a particular area with reference to medicinal plant utilization. The plants need to be evaluated through phytochemical investigation to discover potentiality as drugs.

**Keywords:** Mavanatham, Ittarai, indigenous knowledge, documented, ailments.

### INTRODUCTION

Traditional herbal medicine is an important component of human healthcare world-wide. According to the world health organization (WHO), about 80% of the world's people depend on traditional indigenous medicines, since a large majority of rural people in the developing countries still use these medicines as the first defense in healthcare<sup>1</sup>. The reliance of people on ethno medicine for seasons is because of cost-effectiveness, acceptability, biomedical benefits and accessibility. There has been a continuous growth of demand for herbal medicines globally<sup>2</sup>. The demand has been increasing as a result of growth of human population, habitat loss and alteration, over exploitation, overgrazing, deforestation and the frequently inadequate provision of modern medicine<sup>3</sup>. In recent years, use of ethnobotanical information in medicinal plant research has gained considerable attention in segments of the scientific community<sup>4</sup>. During the last two decades, some notable progress has been made in the field of medicinal plants and their traditional use in different parts of India<sup>5</sup>.

India is one of the leading countries in Asia in terms of the wealth of traditional knowledge systems related to the use of plant species and has a concept of using plants for medicinal purposes which started in the very ancient period. Indian subcontinent is a vast repository of medicinal plants that are used in traditional medical treatments; around 20,000 medicinal plants have been recorded<sup>6</sup>.

Especially, people living in villages have been using indigenous plants as medicines<sup>7</sup>. Knowledge of medicinal

values of plants is recognized by almost every society on earth. The inhabitants of the remote places have good knowledge about the utilization of plants because of the non-availability of synthetic drugs. Ethnobotanical information is necessary to document the plant life in areas especially that are remote and unexplored<sup>8</sup>. In view of these facts, this work was carried out to provide a comprehensive account of folklore medicinal plants of Mavanatham and Ittarai villages, Thalimalai Hills, Sathyamangalam Reserve forest Range, Erode District, Tamil Nadu, India.

The Present study is the first attempt to document the plant species in the area which was unexplored previously; and to record the ethnobotanical knowledge of the occurring plant species. Ethnobotanical research will make it possible to discover some pharmacologically active constituents from these medicinal plants in future. It is also hoped that these findings would provoke further pharmacological as well as phytochemical research in this area.

### MATERIALS AND METHODS

#### Locality/ study area

In the present study an attempt has been made to enumerate the diversity of medicinal plants in Thalimalai Hills, which is a plateau of Western ghats, situated in northern part of Erode District, Tamil Nadu, India. It has an area of 210.85 Km<sup>2</sup>, lies between 11°29'-11°48'N latitude and 70°50'-77°27'E longitude. The hill is situated at about 280m-1105m above mean sea level. **Soil:** Geologically the soil of Mavanatham and Ittarai are red and blackish sandy



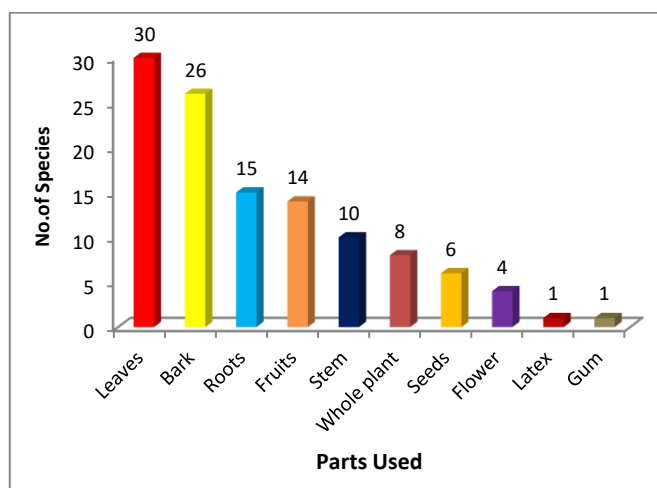
with slightly lime, coarse red and black loamy. The soil found in plant fields and lands comprised sandy loam which is fertile in nature. **Climate:** The climate is cool for about 4-5 months of the year from September to January. The area has an average annual rainfall of about 600 to 850mm. Generally, the climate has the dry season from February to August, high during April and May, the South West Monsoon from July to September. **Temperature:** The average temperature ranges from 33°C (92°F) during summer and 14°C (60°F) during winter season. **Vegetation:** Vegetation of the study area showed 5 types such as, tropical evergreen (Shola), semigreen, mixed – deciduous, dry- deciduous and throne forest. Evergreen forests are restricted to small patches in a few high altitude hill top of Sathyamangalam forest between 750 meters (2,460ft) and 1,649 meters (5,410 ft).

### Collection of Plants

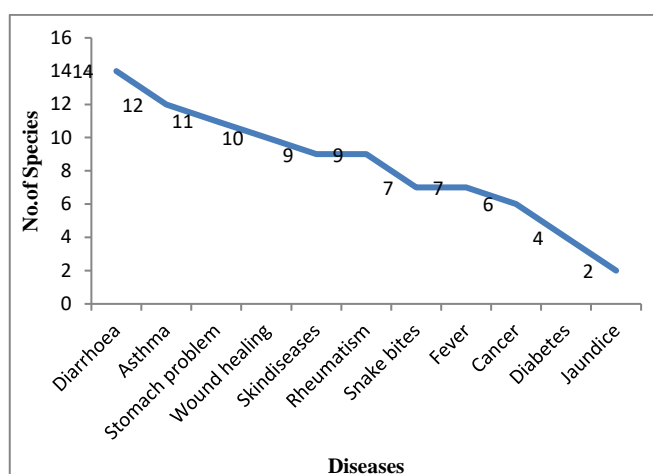
Regular field visits were made from December to January during the year 2015- 2016 to explore the floristic strata. The ethnic values of the medicinal plants were collected from elderly persons and traditional healers of tribal communities. Information was collected through well structured questionnaires and discussions among the informants in their local language. The plant specimens were collected as directed by the resource persons in flowering and fruiting conditions and identified by referring to standard flora<sup>9-12</sup> and voucher specimens were preserved in the Herbaria of the centre for PG and Research Department of Botany, Vellalar College for Women (Autonomous), Erode. Digital photographs of the plants were also taken (Plate -1). The information collected regarding the medicinal uses of plants were analysed properly and documented.

### RESULTS AND DISCUSSION

In the present survey, a total of 56 species under 47 genera of 29 families have been recorded in the study area (Table 1). The survey indicated that the common medicinal plant families in the study area are Mimosaceae, Boraginaceae and Meliaceae, Rutaceae, Fabaceae, Rubiaceae, Tiliaceae, Rhamnaceae, Verbenaceae, Apocynaceae, Combretaceae, Ebenaceae, Moraceae and Ulmaceae. This finding of common medicinal plant families in the study is in agreement with that of Yusuf *et al.*<sup>13</sup> and Sajib and Uddin<sup>14</sup>. Meanwhile, analysis of the plant's parts used showed that leaves are the mostly used plant parts (53.57%), followed by bark (46.42%), roots (26.78%), fruit (25%), stems (17.85%), Whole plant (14.28%), seeds (10.71%), flowers (7.14%) and Gum and latex (1.78%) (Fig.-1). It is important to highlight that such a wide harvesting of leaves and seeds, compared to roots which are important for survival of plants, has a less negative influence on the survival and continuity of useful medicinal plants and hence does not affect sustainable utilisation of the plants<sup>15</sup>.



**Figure 1:** Pie diagram showing the useful part wise percentage of ethnomedicinal plants



**Figure 2:** Graph showing the number of species used to cure different diseases in the study area

Plants are mostly used for the treatment of various ailments diarrhoea (14), asthma (12), stomach problems (11), wounds (10), skin diseases and rheumatism (9), poisonous bites (7), fever (7), cancer (6), diabetes (4) and jaundice (2) (Fig.-2). Plants which are used in different parts of the world for the treatment of similar diseases may be considered to be pharmacologically efficient. Similar observations, where maximum number of species used for treating fever, cuts and wounds were reported by Dey and De<sup>16</sup>.

The most commonly used plant species in the study area are *Aegle marmelos*, *Anogeissus latifolia*, *Benkara malabarica*, *Chloroxylon swietenia*, *Ficus religiosa*, *Guazuma tomentosa*, *Litsea scrobiculata*, *Melia azedarach*, *Odina wodier*, *Pandanus odoratissimus*, *Premna serratifolia*, *Randia dumetorum*, *Terminalia chebula* and *Zizyphus oenoplia*. About 40% of the rural people in the study area depend on traditional medicine for their primary health care. Among the informants, 55% are males and 45% are females. The main occupations of the informants are herbal medicine practitioner, agriculture, agricultural labourer and wage labourer. Most of the villagers in the study are poor and they largely

depend on plants for food, medicine, fuel and other daily necessities.

## CONCLUSION

Many parts of the biogeographical areas of the country still remains unexplored. Hence, it is the need of the hour that major thrust should be given an intensive inventory and documentation of useful species, their chemical constituents, habitats, and potential utilization as raw materials. Present study revealed that the local traditional healers of the study area are rich in ethnomedicinal knowledge and majority of people rely on plant based remedies for common health problems. The survey also revealed that all the traditional healers have strong faith

on ethnomedicines although they were less conscious about the documentation and preservation of ethno medicinal folklore and medicinal plants. Emphasis should also be given to conserve the habitats and useful species via *ex-situ* conservation. Attempt should be made to launch special programmes for raising people's awareness about conservation and utilization of plants around them. This study provides a data of the medicinal plants used by the people to cure different diseases. Thus, the purpose of standardizing traditional remedies is essential to ensure therapeutic efficacy where the value of ethnomedicinal information in modern pharmacology lies in the development of new drugs.

**Table 1:** Summary of Surveyed tree species - Botanical name, Family name, Parts used and the Therapeutic uses of different taxa for various ailments

S. No.	Botanical Name	Family Name	Local Name	Parts Used	Medicinal Usage
1.	<i>Acacia planifrons</i> W. & .A.	Mimosaceae	Odai	Leaves	Skin allergy and cancer
2.	<i>Aegle marmelos</i> Corr.	Rutaceae	Vilvam	Roots, Bark and Fruit	Laxative, astringent, diarrhoea, dysentery and piles
3.	<i>Alangium salvifolium</i> Wang.	Alangiaceae	Alangi	Whole Plant	Skin diseases, fever, blood impurity, arthritis and insect bites
4.	<i>Albizzia amara</i> Boiv.	Mimosaceae	Oonjapattai	Bark and Roots	Inflammations and snake bite
5.	<i>Albizzia lebeck</i> Benth.	Mimosaceae	Katuvagai	Stem, Bark, Flower, Seeds, Leaves and Roots	To relieve swellings, wound healing, night blindness, immune - modulator, hypoglycemic, anticancer and anaphylaxis
6.	<i>Alstonia scholaris</i> R. Br.	Apocynaceae	Elilaipalai	Bark and Leaves	Antibacterial, anti-oxidant, follicles, fever, catarrhal and dyspepsia
7.	<i>Anogeissus latifolia</i> Wall.	Combretaceae	Namai	Flowers and Fruits	Diabetic, diarrhoea and dysentery
8.	<i>Atalantia monophylla</i> Corr.	Rutaceae	Kattu Elemitchai	Leaves and Fruit	Rheumatoid pains, glandular swelling and joint pains
9.	<i>Azadirachta indica</i> A. Juss.	Meliaceae	Vembu	Whole plant	Virus infection, stomach disorder, anti-inflammatory insecticide and skin diseases
10.	<i>Bauhinia racemosa</i> Lam.	Fabaceae	Tataki	Bark, Leaves and Whole plant	Skin ailments like rashes, pimples, fever, piles, cough and asthma
11.	<i>Benkara malabarica</i> (Lam). Tirveng.	Rubiaceae	Pudhan	Fruit	Abdominal pain and throat infections
12.	<i>Borassus flabellifer</i> L.	Palmaceae	Nungu	Roots, Leaves and Bark	Anticancer, dysentery, teeth pain, scurvy, stomachache, jaundice and pregnancy
13.	<i>Chloroxylon swietenia</i> DC.	Rutaceae	Purush	Leaves	Wound healing
14.	<i>Cipadessa baccifera</i> Miq.	Meliaceae	Kalapanarachi	Roots, Stem and Leaves	Skin diseases, dysentery, skin itch, burns, malaria and cure infertility
15.	<i>Commiphora caudata</i> Engl.	Burseraceae	Mangiluvai	Stem, Bark and Leaves	Anti-viral, anti-inflammatory and analgesic
16.	<i>Cordia oblique</i> Willd.	Boraginaceae	Naruvili	Leaves	Anthelmintic, purgative, diuretic, expectorant, antipyretic, hepatoprotective and analgesic action
17.	<i>Cordia gharaf</i> Ehrenb. ex. Asch.	Boraginaceae	Narwilli maram	Bark	Diabetes, ulcers, wounds and tuberculosis
18.	<i>Dalbergia sissoo</i> Roxb.	Fabaceae	-	Leaves and Root	Diabetic, gonorrhoea, anti-inflammatory, astringent, leprosy, boils, eruptions and to allay vomiting
19.	<i>Dichrostachys cinerea</i> W. & .A.	Mimosaceae	Vadatalla	Bark, Roots and Leaves	Head ache, tooth ache, dysentery, elephantiasis, leprosy, syphilis, anthelmintic, strong diuretic and epilepsy
20.	<i>Diospyros ebenum</i> Koen.	Ebenaceae	Acha	Whole Plant	Astringent, attenuant and lithotriptic
21.	<i>Diospyros melanoxylon</i> Roxb.	Ebenaceae	Karaikarutumbi	Seed, Bark, Leaves, Flowers and Fruit	Anemia, ulcers, dysentery, diabetes, fever and snake bite

22.	<i>Ehretia cymosa</i> Thonn.	Boraginaceae	Kalvirasu	Leaves	Febrifuge, haemostatic, laxative, mild lax, fevers and headache
23.	<i>Ehretia ovalifolia</i> L.	Boraginaceae	Isphagol	Root, Stem and Leaves	Syphilis, diphtheria and eczema
24.	<i>Enterolobium saman</i> Prain.	Fabaceae	Rain tree	Root, Leaves and Seeds	Stomach cancer, diarrhoea, intestinal ailments, laxative and chewed for sore throat
25.	<i>Erythroxylon monogynum</i> Roxb.	Malpighiaceae	Devadary	Bark	Stomachic, diaphoretic and diuretic
26.	<i>Eugenia jambolana</i> Lam.	Myrtaceae	Naval	Whole Plant	Air freshners, bronchitis, cramps, dental/oral care and diarrhoea
27.	<i>Ficus bengalensis</i> L.	Moraceae	Aal	Bark and Latex	Rheumatism and dysentery, diabetes, gonorrhoea and piles
28.	<i>Ficus religiosa</i> L.	Moraceae	Arasu	Bark and Leaves	Purgative, vomiting and mouth ulcer
29.	<i>Grewia damine</i> Gaertn.	Tiliaceae	Kaatthootee	Leaves	Skin diseases and stomach ache
30.	<i>Grewia tenax</i> Forsk..	Tiliaceae	Unnu	Bark and Fruit	Digestion and reduce the body weight
31.	<i>Grewia tiliaefolia</i> Vahl.	Tiliaceae	Lumma	Fruit	Diarrhoea, ulcerative and colitis
32.	<i>Guazuma tomentosa</i> kunth..	Sterculiaceae	_	Root	Jaundice
33.	<i>Gyrocarpus americanus</i> Jacq.	Hernandiaceae	Tanaku	Stem and Bark	Spider bite
34.	<i>Holoptelea integrifolia</i> Planch.	Ulmaceae	Bachi	Stem and Bark	Anti-inflammatory
35.	<i>Litsea scrobiculata</i> Meissn.	Lauraceae	Mulakunari	Barks, Leaves, Fruit and Roots	Fractured limbs, diarrhoea and dysentery
36.	<i>Melia azedarach</i> L.	Meliaceae	Malai vembu	Leaves	Antiseptic and heart diseases
37.	<i>Michelia champaca</i> L.	Magnoliaceae	Chenbagam	Flower, Roots and Bark	Pungent, astringent, expectorant, dyspepsia and inflammation.
38.	<i>Odina Wodier</i> Roxb.	Anacardiaceae	Odayam.	Plant, Gum, Stem and Bark	Used to treat leucorrhoea, eye diseases used in the treatment of ulcers, used for treating bruises, sprains and wounds
39.	<i>Pandanus odoratissimus</i> Roxb.	Pandanaceae	Thazhampoo	Leaves	Antipyretic, expectorant, diuretic, cardio-tonic, purgative, leprosy, small pox, scabies, heart and brain diseases
40.	<i>Phyllanthus emblica</i> L.	Euphorbiaceae	Peru Nelli	Fruit	Antioxidant, good tonic and diuretic
41.	<i>Premna serratifolia</i> L.	Verbenaceae	Payminnay	Root and Leaves	Plant pacifies vitiated vata, kapha, nervine pain, arthritis, indigestion, constipation, rhinitis, fever, hemorrhoids and tumors
42.	<i>Prosopis spicigera</i> L.	Mimosaceae	Perumbe	Leaves	Anti-cancerous, cathartic, cyanogenetic, discutient, emetic, poison, stomachic, vulnerary, remedy for catarrh, colds, diarrhoea, dysentery, headache, cold, inflammation, itch, measles, pink eye, stomachache, sore throat, wounds and anti-bacterial
43.	<i>Psydrax umbellata</i> (Wight) Bridson.	Rubiaceae	Nallamandaram	Leaves	Kidney and bladder ailments
44.	<i>Randia dumetorum</i> Lam.	Rubiaceae	Karamul	Whole plant	Cough, skin diseases, ulcers, asthma, flatulence, colic, and is widely used as a medicine for emesis therapy in ayurveda
45.	<i>Santalum album</i> L.	Santalaceae	Sandhanam	Leaves and Stem	Gastric irritability, dysentery, skin diseases and gonorrhoea
46.	<i>Sapindus emarginatus</i> Vahl.	Sapindaceae	Ponnankotai	Leaves, Seed	Effective treatment for skin complaints including eczema, chronic itching, psoriasis, hair care, soapnut helps to remove dandruff, gives work against infections of lice and other parasites, healthy hair. Recent evidence showing that soapnut also reduces hair loss
47.	<i>Strychnos nuxvomica</i> L.	Loganiaceae	Yetti	Stem and Bark	Stomach pain, dysentery, fever and cold
48.	<i>Swietenia mahagoni</i> L.	Meliaceae	Mahogany	Bark and Leaves	Treatment for fever, anti-oxidant and stomach disorders

49.	<i>Tectona grandis</i> L. f.	Verbenaceae	Tekku	Leaves, Bark, Fruit and Stem	Menstrual disorders
50.	<i>Terminalia chebula</i> Retz.	Combretaceae	Kadakai	Dried fruit	Intermittent fever, heart disease, diarrhoea, anorexia leprosy, skin disorders and dysentery
51.	<i>Trema orientalis</i> (L.). Blume.	Ulmaceae	Ambarathi	Root	Diarrhoea
52.	<i>Vitex negundo</i> L.	Verbenaceae	Nochi	Leaves, Bark, Roots and Whole plant	Vermifuge, expectorant, rheumatism, coolant, asthma, eye diseases and rheumatism
53.	<i>Wrightia tinctoria</i> R. Br.	Apocynaceae	Vetpalai	Bark and Seeds	Bilious troubles and aphrodisiac
54.	<i>Zizyphus jujuba</i> Lam.	Rhamnaceae	Ellanthai	Whole plant, Bark, Fruit and Leaves	<b>Cold, influenza</b> , diarrhoea and colic beneficial in the treatment of mental retardation used to treat conjunctivitis and <b>hair disorder</b>
55.	<i>Zizyphus oenoplia</i> Mill.	Rhamnaceae	Churipala chedi	Fruit and Bark	Diarrhoea and cough
56.	<i>Zizyphus trinervia</i> Roxb.	Rhamnaceae	Kaduguilai	Fruit and Seeds	Antifungal, antibacterial, ulcer, anti-inflammatory, sedation, antioxidant, and wound healing properties

Plate -1: Snapshots of some of the surveyed tree species.

*Aegle marmelos* Corr.*Benkara malabarica* (Lam). Tirveng.*Cipadessa baccifera* Miq.*Cordia gharaf* Ehrenb. ex. Asch.*Erythroxylon monogynum* Roxb.*Grewia damine* Gaertn.*Premna Serratifolia* L.*Santalum album* L.*Zizyphus jujuba* Lam.

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### REFERENCES

1. Goleniowski ME, Bongiovanni GA, Palacio L, Nunez CO and Cantero JJ. Medicinal plants from the Sierra de Comechingones, Argentina. *J. Ethnopharmacol.*, 107(3), 2006, 324- 341.
2. Haile Y, Delenasaw Y and Damel T. Ethnomedicinal plant knowledge and practice of the oromo ethnic group in Southern Ethiopia. *J. Ethnobiol. Ethnomed.*, 4(1), 2008, 1-10.
3. Savikin K, Zdunic G, Menokovic N, Zivkovic J, Ujic N, Terescenko M and Bigovic D. Ethnobotanical study on traditional use of medicinal plants in South Western Serbia, Zlatibor district. *J. Ethnophar.*, 146, 2013, 803 – 810.
4. WHO: Traditional Medicine, Fact Sheet, <http://www.who.int/mediacentre/factsheets/fs134/en/>. 2008.
5. Nimasow G, Ngupok R and Nimasow OD. Ethnomedicinal knowledge among the adi tribes of lower dibang valley district of Arunachal Pradesh, India. *Int. Res. J. Pharm.*, 3(6), 2012, 223 - 229.
6. Selvadurai S, Shri Vijaya Kirubha T, Senthamarai R and Dutta Roy S. *Asian J. Biochem. Pharm. Res.*, 3, 2013, 116.
7. Marwat SK, Rehman FU, Khan MA, Ahmad M, Zafar M and Ghulam S. *Pak. J. Bot.*, 43, 2011, 1453.
8. Shah MA. Ethnomedicinal Study of the Plants of Tehsil Bhakkar, Punjab, Pakistan. *Ethnobot.*, 17(4), 2005, 171 -175.
9. Gamble JS and Fischer CEC. The Flora of the Presidency of Madras, Vols I-III, 2<sup>nd</sup> reprint edition, (Botanical Survey of India, Calcutta), 1967.
10. Henry AN, Kumari GR and Chitra V. Flora of Tamil Nadu, India, Series – I Analysis Vol-II (Botanical Survey of India Southern Circle, Coimbatore), 1987.
11. Matthew KM. An excursion flora of central Tamil Nadu, India, (Oxford and IBH publishing Co. Pvt. Ltd., New Delhi), 1991.
12. Nair NC and Henry AN. Flora of Tamil Nadu, India. Series –I Analysis Vol – I, (Botanical Survey of India, Southern Circle, Coimbatore), 1983.
13. Yusuf M, Begum J, Hoque MN and Chowdhury JU. *Medicinal Plants of Bangladesh*. Chittagong, Bangladesh: BCSIR. 2009.
14. Sajib NH and Uddin SB. Ethnomedicinal study of plants in Hathazari, Chittagong, Bangladesh. *Tropical Agricultural Sciences*, 38(2), 2015, 197-210.
15. Yirga G. Ethnobotanical study of medicinal plants in and around Alamata, Southern Tigray, Northern Ethiopia. *Curr Res J. Biol Sci.*, 2(5), 2010, 338-344.
16. Dey A and De JN. A Survey of Ethnomedicinal Plants used by the tribals of Ajoydha Hill Region, Purulia District, India. *Am. Eurasian J. Sustain. Agr.*, 4(3), 2010, 280-290.

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