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Case Report

Botany for Medicinal science

Traditional Healer of Asclepiadoideae of Apocynaceae in Bankura, West Bengal

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Abstract: The present communication deals with the ethno-botanical exploration, identification of some plants of formerly Asclepiadaceae that are treated as subfamily Asclepiadoideae, the milkweed subfamily of family Apocynaceae (order Gentianales) as per APG III system of classification. The plants of this subfamily are being used frequently by the rural people of Bankura. During the present investigation, a total of 14 species of subfamily Asclepiadoideae have been reportedthey were used by the local health healers for the treatment of different diseases. Among them *Calotropisgigantea*, *Hemidesmusindicus*, *Pergulariadaemia*, *Telosmapallida*, *Tylophoraindica*, are leading species that are frequently used for a variety of health problems. As reported by informants, roots are the most important part used for herbal preparation followed by whole plant, leaf and fruit. The rural people of Bankura have good knowledge about ethno-medicinal plants and this legacy of traditional culture must be conserved. So present paper depicts various plant resources of ethno-medicinewith special reference to subfamily Asclepiadoideae.

Keywords: Asclepiadoideae, Bankura, Ethno-medicinal Plants, Tribal knowledge, Rural people.

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1. INTRODUCTION

Biodiversity is the most important wealth of our planet and forms the foundation upon which the human civilization is built. The use of plants as medicines predates written human history. Since times immemorial, plants have been utilized for medicinal use by the traditional herbalists, Hakims, Vaidays, Ayurvedic practitioners and the common man. Herbal medicine is the study and use of medicinal properties of plants. Traditional healers provide considerable information about the use of many plants or plant parts as medicine.[1-4]Many of the methods for treating injuries and diseases have been passed down through families for generations and some of these have been adapted for use by the medicinal profession. The World Health Organization (2003) has estimated that 80% population of the developing countries is unable to afford pharmaceutical drugs and rely on traditional herbal medicine to sustain their primary health care needs.[5] During the past one century, there has been a rapid extension of allopathic medicinal treatment in India but still now the use of natural products as medicine; especially plant products are widely used in the societies of various rural tribal people particularly in the remote areas with few health facilities.[6-7]Many work have been done about ethno-medicinal and floristic survey of different plant species under different families of Bankura district,[8-14]but there is noclear concrete report about the plants of the subfamily Asclepiadoideae, that are used by the tribal community of Bankura as herbal healer. The plants of Asclepiadoideae are commonly herbs or shrubby climbers with milky latex. Flowers are arranged in cymose or racemose pattern, presence of corona, stamens get fused with stigmatic disc forming gynostegium condition, pollens forming pollinia, Ovaries and style free, stigma five angled, fruits pair follicles.The present investigation has been undertaken to know the traditional knowledge about the uses of medicinal plants of the subfamily Asclepiadoideae.

2. MATERIALS AND METHODS

2.1 Description of the study areas

Bankura is located in the western part of the state West Bengal, situated between 22°38' and 23°38' North latitude and between 86°36' and 87°46' East latitude, it is the fourth largest district of West Bengal. It has an area of 6,871.24 M2. This district is economically poor and industrially backward. Most of the people from this region are farmers. But the indigenous system of medicines in Bankura District is very resourceful since the district is very rich in Scheduled tribe population. [9,11]Different tribal groups like Santals, Oraons, Koras, Bhumij, Mahali, Mundas etc. dwell adjacent to the forest area of this district.

2.2 Documentation of medicinal plants

Periodic field surveys for ethno-botanical exploration were undertaken during August 2018 to July 2019 in Bankura District. During the course of the study, five field trips were carried out in local tribal villages of mainly Santal, Mahali, Munda and Sabar tribes of Simlapal and Khatra Subdivision. Information was collected from traditional herbal healers, local people having rich folk knowledge of age 50 and above were interviewed. They help us to collect ethno-medicinal plants they know or to show the plant specimens on their original site. A sum of 147 informers including 66 women of the age of 50 and above of the region were interviewed randomly. They helps us to collect specimens or samples of ethno-medicinal plants. The informers have a good knowledge on medicinal properties and habit of Asclepiadaceae plants in the area. But the indigenous knowledge is not being inherited properly as a secret rite of the ancient societies. But nowaday this knowledge is gradually disappearing in their younger generations due to various developmental and cultural activities. Thus the elders are more informative on this subject. There are many interesting and sometimes astonishing themes to learn while asking them regarding the uses of medicinal plants in their daily life. The standard methods as suggested by Jain and Ra(1977)were adopted for herbarium preparation.[15] For the sake of identification of the plant materials, the authors had to observe the flowering stages of the specimens throughout the year. The specimens were identified using fresh as well as herbarium materials from different books present in the library of our college like Bengal Plants, A Handbook of Excursion Flora of Gangetic Plains and Adjoining Hills, Flora of Bankura District West Bengal, Taxonomy of Angiosperms, Medicinal Plant Resources of South West Bengal.[16-20] and also processed as voucher specimen for herbarium preservation following the standard herbarium technique by Jain, Jain and Srivastava.[21-22] Herbarium specimen were deposited in the herbarium of Botany Department in Bankura Christian College.

3. RESULT AND DISCUSSION

The present investigation has documented 14 angiospermic plants of this subfamily, belonging to 13 genera along with their scientific name, habit, vernacular name and their ethno-botanical uses (Table 1). Most of the plants are climbers in habit followed by shrub and herb. (Fig1).

Table 1. Enumeration of Different Plant Species is given below

Sl. No.	Scientific Name	Habit	Vernacular Name	Ethno-medicinal uses
1	*Asclepias curassavica* L.	Herb	Bankarpas	Whole plant is used to treat tumor, asthma, fever, inflammation.
2	*Calotropis gigantea* (L.) Dryand.	Climbing shrub	Akanda	Root powder is orally taken for the treatment of eye disease, headache, bleeding teeth, epilepsy, ear pain, paralysis nervous disorder.
3	*Calotropis procera* (Willd.) Dryand ex. Ait.	Shurb	SadaAkand	Root is used to treat dyspepsia.
4	*Ceropegia hirsuta* Wight.	Climber	Kalilata	Root is used in the treatment of different stomach

	& Arn.			disorders.
5	*Cryptolepis dubia* (Burm.f.) M.R.Almeida	Climbing shrubs	karanta	Root paste cure rickets in children, given to women if milk production decreases.
6	*Cryptostegia grandiflora* (Roxb.) R.Br.	Climber	Chabukchori	The whole plant is used to treat wounds. Root paste is used externally on the chest to cure asthma.
7	*Gymnema sylvestre* (Retz.) R.Br. ex Schult.	Woody Climber	Gurmar	The whole plant is used to control the stomach, as laxative and diuretic. The plant is used to control cough, sore eyes.
8	*Hemidesmus indicus* (L.) R. Br. ex Schult.	Herb	Anantamul	The dried roots are used to control skin and urinary diseases, paralysis, cough, asthma. Used as a blood purifier.
9	*Marsdenia tenacissima* (Roxb.) Wight. et Arn.	Shrub	Tinlata	Root extract is used to treat asthma, tonsillitis. Root decoction sometimes used in pneumonia among children.
10	*Oxystelma esculentum* (L. f.) Sm.	Climber	Dudhaalata	Decoction of the whole plant is used in the treatment of ulcers, sore throat and itches.
11	*Pentatropis microphylla* (Roxb.) Wight & Arn.	Climber	Pancharatilata	Leaf juice is used to cure constipation, indigestion.
12	*Pergularia daemia* (Forsk.) Chios.	Climber	Dhudlata	Fresh leaves are boiled with water and vapour is inhaled for cold and headache. Leaf paste is used in leprosy, eczema, inflammation and swelling.
13	*Telosma pallida* (Roxb.) Craib.	Climber	kobla	The milky latex from fruits used in leucoderma and skin diseases and also used to treat cough, cold and asthma.
14	*Tylophora indica* (Burm.f.) Merr.	Climber	Antomula	Root and leaf are used for the treatment of asthma with cough, whooping cough and dysentery.

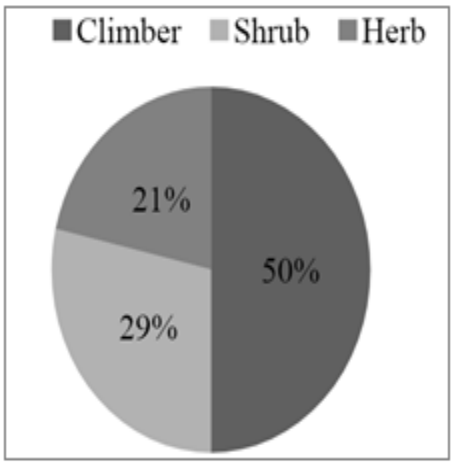

Fig 1. Graphical representation of habit character of studied plants.

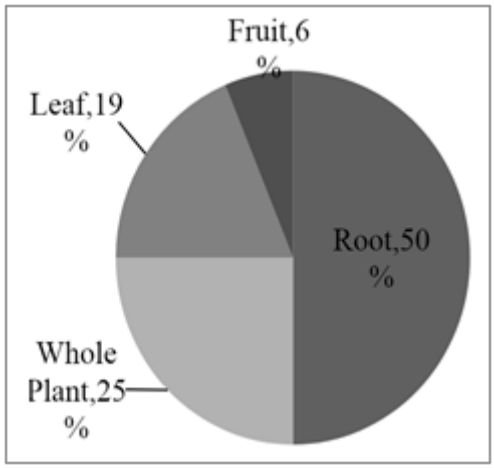

Fig 2. Graphical representation of studied usable parts of the plants.

All the plants mentioned in this study are very popular among the tribal community of this district. According to informants (traditional healers) irrespective of distribution of local tribal people *Calotropis gigantea*, *Hemidesmus indicus*, *Pergularia daemia*, *Telosma pallida*, *Tylophora indica*, are leading species that are frequently used for various health problems. The present studies indicate that roots are the most important part used for herbal preparation followed by whole plant, leaf and fruit (Figure 2). The most common method of preparing medicines was cutting the particular root, leaves, whole plant or bark in pieces and boiling them in water. The decoction was then drunk as tea, sometimes mixed with milk and sugar to camouflage its unpleasant taste. The use of different plants may vary according to different tribal communities as well as place. It means that one particular plant can be used by different tribal communities as well as villagesto cure different diseases. Complicated mixtures of different species were occasionally prescribed. Bankura is one of the remote districts of West Bengal, is ecologically and climatically favorable for different medicinal plants at least for the treatment of primary health care. But poverty, ignorance, illiteracy and less communication are major problems in different tribal zones which leaves many medicinal plants undiscovered to the local population. The wealth of medicinal plant knowledge has been transmitted orally from generation to generation but it seems that this knowledge is vanishing from modern society since younger people are not interested in carrying on this tradition. In Bankura District, many local people are going for agriculture and sustainable harvesting of plants with medicinal value which helps not only in conservation of different traditional medicinally important plants but also in marketing of these plants and their products for economic growth of the people. So it is necessary for proper identification, standardization and documentation of different indigenous medicinal plants for better use by modern society. Tribal people collect the medicine from their own localities when they grow medicinal plants at their own homesteads. Medicinal plants are extremely useful for folk communities as ethno-veterinary medicine.[23-24]Due to less side effect and cost effective, herbal

medicines have become very popular in urban areas throughout the World.[25-26] These are becoming very useful especially in treating the day to day common ailments.[27] There is a huge demand for both experimental and clinical research to validate the potential of herbal drugs and rigorous scientific testing along the principles of evidence-based medicine that help herbal medicine to become a very justifiable scientific treatment regime for all.

4. CONCLUSIONS

Indian civilization has played a pioneer role from time immemorial in utilizing plants such as indigenous drugs. Plant species serve as a rich source of many novel biologically active compounds. Due to exploitation of many herbal plants in maximum quantity for primary health care as herbal drugs that give us alarm for extinction in near future. So the conservation efforts are needed by plantation and protection of these plants with maximum participation of local people and it is encouraging to find growth of human interest in medicinal plants and their sustenance both rural and urban areas as well as laboratories. Proper identification of the species is absolutely necessary not only for their identification but also to help to resist their extinction in near future.

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6. AUTHORS CONTRIBUTION STATEMENT

The authors declare that they have similar contributions for design, analysis, interpretation of data and wrote the final manuscripts. Dr Banerjee prepared the table, graphs and reference part of the manuscript. Both the authors approved the final revised version of manuscripts to be published.

7. CONFLICT OF INTEREST

Conflict of interest declared none.

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