Ethnobotanical uses of plants and constrains in Pathra and its adjoining areas, Paschim Medinipur District, West Bengal

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ABSTRACT

A survey was conducted in to collect the information about the plant diversity and uses of these plants by the local people in different purposes Pathra and its adjoining village areas in Paschim Medinipur district, W.B. This area is beside river Kangsabati, popular due to presence of some archaeological structures and natural beauty. The ethnobotanical study revealed that different plant species which is used by the villagers of Pathra, depends on these local plants, which have various economical aspects. Different parts of these plants help in the production of timber, medicine, jewellery. Fruit yielding plants and ornamental plants are also there. Different species of fungi, pteridophytes, monocots and dicots are there which created a rich diversity. But new generation tends to switch off towards chemical substitutes of the ethno-products. Now-a-days popularity of the area draws group of people to come here to celebrate different festivals like Holi and picnic. These situations lead to a negative impact on natural biodiversity of this area and its conservation, by loss of endangered plants, medicinal plants including soil erosion, soil toxicity as plastics and other nondegradable materials used by the tourists has deposited on the soil. In this paper we are trying to spread the information about the values of these local plants and also trying to aware the people to save the diversity of this area.

Keywords: Conservation, Diversity, Ethnobotanical, Paschim Medinipur, Soil erosion.

INTRODUCTION

Paschim Medinipur district is the southern part of West Bengal under 22.4080° latitude and 87.3811° longitude with an area of 6308 km²; dominated by red lateritic soil. This district is well known for its rich plant diversit as per researcher’s survey in Paschim and Purba Medinipur district [2,3,5,6,7,8,9]. Extensive ethnobotanical uses by peoples here also the causes of rich biodiversity as for need these plants are propagated or conserved. Pathra (22.45985°E and 87.77195°S) is a village near to Midnapore town with some heritage remnants of ancient temples. Villagers of Pathra and adjacent areas use various plants as medicine, as timber, as jewelry and also as different purposes. Rich traditional verbal knowledge has been passed down from generation to generation and it is reflected in their life style and behavior as they have a symbiotic relationship with their natural habitat [2]. The biodiversity of particular vegetation pocket is the treasure trove of the raw material resources for the preparation of ethnomedicines, modern medicines, wooden materials, building materials, etc [10]. Different types of endangered, ethnobotanical plant species have been observed in Pathra, this biodiversity rich area is a key source of ethnomedicine, timber, jewelry, etc. Plants of this area are economically important, so we could say that the vegetation of this area is ecologically as well as economically important. So, this area has a strong scope for socio economic development. Some adjoining areas of Pathra is basically river bank so high risk of soil erosion is always a major problem. To conserve these plants beside riverbank as well as biodiversity that may protect soil erosion and maintain ecological balance. Increasing deforestation for timber sources in saw mills, pollution with rapid urbanization, exerts a great impact on plant diversity in this area.

MATERIALS AND METHODS

Study area

The survey area was village Pathra and its surroundings, situated in Paschim Medinipur district, West Bengal (22.45985°E and 87.77195°S); covering total 341.15 hect. geographical area. The place is located about 8.4 km distance from the Midnapur town, beside bank of the Kangsabati river; with alluvial soil, tropical mixed type of vegetation maximum mean temperature is ± 45°C during summer.
and lowest mean temperature 10°C during winter. Annual rainfall is 1530 mm mostly within June to September. This area is known for some ancient temples.

**Collection Data Specimens**

Surveying was conducted in different time (April, August and December) at Pathra and its surroundings. Some specimens were collected in flowering stage. Specimens were identified with the help of Flora of British India [4] and Bengal Plants [8]. The list of collected plant names are arranged alphabetically (Table- 1,2,3,4) along with their family name, local name, habit, and ethnobotanical use.

**Map of the Study Area** (Figure 1)

**RESULT**

Our present study is evidenced with ethnobotanical uses of total 66 plant species under 58 genera and 38 families. Maximum species belong to Apocynaceae [4] family (Table 1). Four species belong to Acanthaceae family. Three species each belong to Asteraceae, Cucurbitaceae, Lamiaceae and Menispermaceae family. Two species each belong to Arecaceae, Colchicaceae, Dioscoriaceae, Euphorbiaceae, Malvaceae, Fabaceae and Moraceae family. One species each belong to rest of the families. Some plant species are rare and have high medicinal as well as economical value. Out of these 66 plant species 47 plants are medicinally important, 5 plants are ornamental (Table 2), 10 plants are fruit yielding (Table 3) and 5 plants are timber yielding (Table 4), some provides both medicinal and other uses.

**Table 1:** Plants used as ethnomedicinal plants-scientific name, family name, local name, habit and uses

| S. No | Scientific Name                  | Family           | Local Name       | Habit/Status | Use                                                                 |
|-------|----------------------------------|------------------|------------------|--------------|----------------------------------------------------------------------|
| 1     | *Abroma augustum* (L.) L.f.     | Malvaceae        | Ulat kambal      | Shrub (rare) | Root and bark of the plant is used in gynaecological disorders       |
| 2     | *Achyranthes aspera* L.         | Amaranthaceae    | Apang            | Herb (abundant) | Flowering inflorescence rubbed with sugar, are made into pills and given to people bitten by dogs |
| 3     | *Aloe vera* (L.) Burm.f.        | Asphodelaceae    | Ghritakumari     | Herb (frequent) | Leaf extract is used to make medications for skin, such as wounds, frostbite, rashes, burn |
| 4     | *Alstonia scholaris* (L.) R.Br. | Apocynaceae      | Chattim          | Tree (frequent) | Bark is used as remedy in chronic diarrhea and dysentery          |
| 5     | *Andrographis paniculata* (Burm.f.) Nees | Asteraceae | Kalmegh           | Herb (frequent) | Leaf and root are used in treatment of diabetes, high blood pressure, ulcer |
| 6     | *Ananas comosus* (L.) Merr.     | Bromeliaceae     | Ananas           | Herb (Less frequent) | Leaf extract reduce blood cholesterol and improve digestion. |
| 7     | *Aristolochia indica* L.        | Aristolochiaceae | Iswarimal        | Climber (rare) | In case bowel complaints of children fresh juice of bark and leaves are used |
| 9     | *Acadus thaca indica* A.Juss.   | Meliaceae        | Neem              | Tree (frequent) | Leaf is used to treat eye disorders, bloody nose, stomach disorders and skin diseases |
| 10    | *Barleria cristata* L.          | Acanthaceae      | Swethjhanti      | Herb (Less frequent) | Whole plant is used as blood purifying component and treat dental problems |
| 11    | *Blumea lacera* (Bur.f.) DC     | Asteraceae       | Barokukimsima    | Herb (abundant) | Leaf extract used in treatment of cough and headache |
| No. | Scientific Name | Family | Common Name | Plant Part(s) Used and Its Effect |
|-----|----------------|--------|-------------|---------------------------------|
| 12  | Calotropis procera (Aiton)W.T.Aiton | Asclepiadaceae | Akanda | Shrub (frequent) | Leaf is used in digestive disorders |
| 13  | Capparis zeylanica L. | Capparaceae | Kalokera | Climber (Less frequent) | Leaves are used as antidote to snake bite and to cure small pox |
| 14  | Casuarina equisetifolia (L.) Lippold | Apocynaceae | Gulancha | Tree (Less frequent) | Leaf or bark extract is taken to cure fever and to loosen the bowels |
| 15  | Catharanthus roseus (L.) G.Don | Apocynaceae | Nayantara | Herb (frequent) | Leaf extract used in treatment of diabetes |
| 16  | Cayaponia laciniosa (L.) C. Jeffrey | Cucurbitaceae | Mala | Climber (rare) | Seed is used in metabolic disorders |
| 17  | Centella asiatica (L.) Urban | Apiaceae | Thankuni | Herb | Leaf is used in metabolic disorder |
| 18  | Cheilocostus speciosus (J.Konig) C.Specht | Apiaceae | Thankuni | Herb | Leaf is used in metabolic disorder |
| 19  | Cissus quadrangularis | Vitaceae | Harjora | Climber (frequent) | Stem is used in bone fractures and in weak bone treatment |
| 20  | Coccosia grandis (L.) Voigt | Cucurbitaceae | Telakucha | Climber (frequent) | Fruit used to treat leprosy, bronchitis and jaundice |
| 21  | Coccosia hispida (L.) Diels | Menispermaceae | Daipata | Climber (rare) | Leaves are used to treat skin disorders like infections and itchy skin |
| 22  | Commelina benghalensis | Commelinaeae | Kansra | Herb (abundant) | Whole plant is used as diuretic and anti-inflammatory agent |
| 23  | Cucurbita pepo | Convolvulaceae | Swarnalata | Climber (Less frequent) | Plant parts are used to treat skin disease like itchy skin and cure body pain |
| 24  | Cymodoon dactylon (L.) Pers. | Poaceae | Durba | Herb | Leaf and stem are used as laxative agent |
| 25  | Cyperus rotundus L. | Cyperaceae | Muthaghass | Herb (frequent) | Leaf and stem paste used for treating digestive system disorders |
| 26  | Dioscorea alata | Dioscoriaceae | Chapti Alu | Climber (frequent) | Tubers used to treat stomach pain, and skin related problems |
| 27  | Dioscorea bulbifera L. | Dioscoriaceae | Kukural | Climber (frequent) | Bulbils used for treating dysentery and diabetes |
| 28  | Dregea volubilis (L.) | Apocynaceae | Titakunja | Climber (rare) | Leaf paste along with pepper is a good remedy to treat dyspepsia |
| 29  | Ficus hispida L. | Moraceae | Dunur | Tree (frequent) | Fruit is used to treat constipation, leaf used for treating skin disease and diabetes |
| 30  | Ficus religiosa L. | Moraceae | Ashatha | Tree (frequent) | Ripe fruits and bark are used to treat asthma |
| 31  | Gloriosa superba L. | Colchicaceae | Ognushikha | Herb (rare) | Leaf and tuber used to treat leprosy, gout and infertility |
| 32  | Jatropha gossypifolia | Euphorbiaceae | Lal veranda | Shrub (frequent) | Leaf, stem and root, are used to cure stomach pain, and also used as a blood purifier |
| 33  | Justicia adhatoda L. | Acanthaceae | Basak | Shrub (Less frequent) | Leaves are used to treat like common cold and cough |
| 34  | Justicia gendarussa | Acanthaceae | Jagatman | Shrub (Less frequent) | Leaves are used to treat bronchitis, and allergic disorders |
| 35  | Kalanchoe pinnata (Lam.) Pers. | Crassulaceae | Pathorkuchi | Shrub (Less frequent) | Leaf paste is used in healing and also reduces the pain |
| 36  | Luffa acutangula Mill. | Cucurbitaceae | Dhundul | Climber (frequent) | The fruit has been used in leprosy |
| 37  | Mikania micrantha Kunth | Asteraceae | Taralata | Climber (abundant) | Leaf paste used to stop bleeding or used as healing agent |
| 38  | Ocimum basilicum L. | Lamiaceae | Dulaal tulsi | Herb (Less frequent) | Leaves used to treat headaches, coughs and diarrhea, |
| 39  | Ocimum sanctum L. | Lamiaceae | Tulsi | Herb (abundant) | Leaves used in cold and cough |
| 40  | Pergularia daemia (Forsk.) Chiov. | Apocynaceae | Ajashringi | Climber (frequent) | Roots, shoots and latex are used to treat cough and whooping cough |
| 41  | Rauwolfia serpentina (L.) Benth. ex Kurz | Apocynaceae | Sarpagondha | Herb (rare) | Root is used for snake and reptile bites |
| 42  | Ricinus communis L. | Euphorbiaceae | Bherenda | Shrub (abundant) | Leaves and stem are used in treatment of stomach disorders like constipation |
| 43  | Sida cordifolia L. | Malvaceae | Beral | Herb (frequent) | Leaves are used to treat tuberculosis |
| 44  | Solanum sisymbriifolium Lam. | Solanaceae | Swetranega | Herb (abundant) | Stem and leaves are used to control blood pressure and diarrhea |
| 45  | Stephania japonica (Thunb.) Miers | Menispermaceae | Akanadi | Climber (Less frequent) | Leaf paste applied on septic and roots used to treat diarrhea |
| 46  | Tinospora sinensis (Lour.) Merr | Menispermaceae | Padmagulancha | Climber (frequent) | Stems are used for treating piles |
| 47  | Typhonium trilobatum | Araceae | Ghat kochu fal | Herb (Less frequent) | Tubers are used to treat asthma and nausea |
Table 2: Fruit yielding plants with their Scientific name family name, local name and habit

| S. No | Scientific Name          | Family          | Local Name     | Habit  |
|-------|--------------------------|-----------------|----------------|--------|
| 1     | *Annona reticulata* L.   | Annonaceae      | Nona (frequent)| Tree   |
| 2     | *Borassus flabelifer* L. | Arecaaceae      | Taal (abundant)| Tree   |
| 3     | *Mangifera indica* L.    | Anacardiaceae   | Aam (frequent) | Tree   |
| 4     | *Musa × 8paradisiaca* L. | Musaceae        | Kala (frequent)| Herb   |
| 5     | *Phoenix sylvestris* (L.) Roxb. | Arecaaceae | Khejur (frequent) | Tree   |
| 6     | *Phoenix accaulis* Roxb. | Arecaaceae      | BanKhejur (frequent) | Tree   |
| 7     | *Grewia asiatica* L.     | Malvaceae       | Falsa (frequent)| Tree   |
| 8     | *Syzygium cumini* L.     | Myrtaceae       | Jam (frequent) | Tree   |
| 9     | *Zizyphus jujuba* Mill   | Rhamnaceae      | Kul (frequent) | Tree   |
| 10    | *Flacourtia indica* Merr | Salicaceae      | Boichi (less frequent) | Tree   |
| 11    | *Ananas comosus* (L.) Merr. | Bromeliaceae | Anaras (less frequent) | Herb   |

Table 3: Plants used for timber yielding plants with their Scientific name, family name, local name and habit

| S. No | Scientific Name                        | Family     | Local Name     | Habit           |
|-------|----------------------------------------|------------|----------------|-----------------|
| 1     | *Flacourtia jangomas* (Lour.) Raeusch. | Salicaceae | Paniala        | Tree (less frequent) |
| 2     | *Litsea glutinosa* (Lour.) C.B.Rob     | Lauraceae  | Menda pata     | Tree (less frequent) |
| 3     | *Tectona grandis* L.f.                 | Lamiaceae  | Segun          | Tree (frequent)  |
| 4     | *Albizzia lebbeck* (L.)Benth          | Fabaceae   | Siris          | Tree (frequent)  |
| 5     | *Vachellia nilotica* (L) Hurter and Mabb | Do       | Babla         | Tree (frequent)  |
| 6     | *Azadirachta indica* A.Juss., 1830     | Meliaceae  | Neem           | Tree (frequent)  |

Table 4: Scientific name of the ornamental plants with their family name, local name and habit

| S. No | Scientific Name                  | Family     | Local Name     | Habit               |
|-------|----------------------------------|------------|----------------|---------------------|
| 1     | *Cardiospermum halicacabum* L.   | Sapindaceae| Futka          | Climber (less frequent) |
| 2     | *Clitoria ternatea* L.           | Fabaceae   | Aparajita      | Climber (frequent)  |
| 3     | *Gloriosa superba* L.            | Colchicaceae| Ognishikha    | Herb (rare)         |
| 4     | *Hiptage benghalensis* (L.) Kurz | Mapighaceae|                | Climber (rare)      |
| 5     | *Passiflora foetida* L.           | Passifloraceae| Jhumkolata   | Climber (less frequent) |

Figure 2: Plants in Pathra

Figure Legends: 1- Conversation with local people, 2- *Ficus hispida*, 3- *Jatropha gossypifolia*, 4- *Typhonium trilobatum*, 5- *Stephania japonica*, 6- *Litsea glutinosa*, 7- *Coccinia grandis*, 8- *Sida cordifolia*, 9- *Ricinus communis*
DISCUSSION

The survey revealed that the area has a rich ethnomedicinal sources which the villagers of low income can easily avail and can afford a healthy organic lifestyle. Though some villagers have rich knowledge and on practice of ethnobotanical uses, new generation is going distracted or indifferent in ethnobotanical uses and introduction of chemicals is shifting them to depend on market products in daily uses rather than safer plant parts. This alteration of lifestyle not only reducing ethnobotanical knowledge among them, the need of conservation of biodiversity is being reduced, as they are growing concepts as those are less important. This shifting and over exploitation of trees for timber and fuel-wood without replanting may affect the biodiversity in this area in future. The increased tourism and urbanization are another cause of the shifting of lifestyle and pollution as byproduct of those is a threat to biodiversity in near future.

CONCLUSION

Village Pathra is a combination of history and plant diversity; archeological importance bridges with plant diversity. The flora of this area is source of food, fodder, medicine, fuel etc. This area has rich plant diversity and ethnobotanical uses and knowledge, but rapid urbanization and exposure to modern world showing a tendency to neglect the same. Tourist pressure in this area increasingly changes the ecosystem harmony, that can hamper the growth and diversity of the local plants. Government along with local people may adopt necessary steps to protect pant diversity of the area from destruction. Sustainable development approaches may provide a good conservation strategy for this area. There is a great opportunity for local employment on the basis of scientific cultivation and use of ethnobotanical plants.

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