

Medicinal plants of home gardens in Hijli coast of Purba Medinipur in West Bengal

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Abstract- Hijli is a coastal station nearer to open mouth of Bay of Bengal in Purba Medinipur district harbors many valuable medicinal plants but some of them used by local people for various purposes. The use of medicinal plants and their parts are diverse. People use allopathic medicine, homoeopathy and ayurvedic treatments as well as medicinal plants directly to cure different ailments. Almost all people use directly or indirectly medicinal plants advised by medicinal professionals as well as by traditional knowledge gathered from forefather. Common diseases associated with the community people of Hijli are fever, common cold, cough, dysentery, asthma, urinary problem, acidity, allergy, constipation and skin problem. Leaves, whole plants, seeds, fruits, stem bark, twigs, seeds, rhizome, and root parts of medicinal plants are used for various purposes. The present paper reflects 20 important medicinal plants and their conservation in the home garden of local people have been presented. This may lead to attract more people to use various medicinal plants which have less to lesser side effects as the use is indigenous practice based found among the people in the same community in coastal Purba Medinipur to restore the ecosystem pristine.

Keywords- Medicinal plants, home gardens, use pattern and conservation, Hijli.

I. INTRODUCTION

Coastal belt in erstwhile Midnapore, the historically famous site is now fall under Purba Medinipur District in West Bengal State of India (Das and Ghosh, 2018). Coastal Purba Medinipur District is famous in West Bengal from the ancient age. Purba Medinipur is one of the 23 administrative districts of West Bengal with the head quarters at Tamluk which was previously called 'Tamralipta' (Bandyopadhyay, 2009). It was formed on 1st January 2002 after partition of Medinipur into Purba Medinipur and Paschim Medinipur though later on Paschim Medinipur is divided into Jhargram and Paschim Medinipur district since 2017. The state of Odisha is at the southwest border; the Bay of Bengal lies in the south; the Hoogly river and South 24 Paraganas district to the east; and Howrah district to the north east. The district has

four sub-divisions namely Tamluk, Contai, Egra and Haldia (Wikipedia, 2017). Total area of the district is 430140 lakh hac. The Purba Medinipur district is geographically located between 21° 36' 35"N to 22°57' 10" N latitude and 86° 33' E to 88° 12' 40" E longitude (Das and Das, 2014). Topographically the district can be divided into two parts i.e. a) almost entirely plane lands on the east, west and north and b) the coastal plain land on the south. The coastal belt of Purba Medinipur district is 27% of West Bengal. This district has a long coastal tract of 65.5 km extending from West Bank of Hooghly estuary from New Digha and then Junput, Dadanpatrabar, Khejuri, Haldia on the east to the further north east up to the Tamluk or bank of Rupnarayan (Mondal et al. 2013). It has five administrative Community Development Blocks, namely Khejuri II, Contai II (Desapran), Contai I, Ramnagar I and Ramnagar II. The elevation of the district is about 4 meters above mean sea level. This belt is often occasionally affected by the cascades of cyclones and strong storms. 'Fani' a strong storm attacked recently in the year 2019 though no serious dame recorded till date except Puri and Bhubaneswar in Odisha..

The environment is characterized by strong winds, erosion, high evaporation, salinity and scarcity of nutrients in the soil. The soil of coastal belt is mainly alluvial, sandy and saline. Alluvial soil is found in inland which is very fertile and different types of crops and vegetable are grown. Sandy soil is found in sand dunes and generally least of or devoid of organic matter. Saline soil is found in coastal tidal area and in salt pan (Das, 2014). Major rivers of Purba Medinipur are Haldi, Rupnarayan, Rasulpur, Bagui and Keleghai. River water is an important source of irrigation. Majority of plant species available are wild natural kind but a few of them are agricultural type. Some plants are introduced type used time to time for various purposes. Coastal areas and tidal areas are covered with halophytes and halophytic associates. There are some exotic species like Eupatorium, Lantana, Parthenium etc. Local people cultivate land with different economic plant species like a large no of rice varieties, khesari (Lathyrus sp.) etc. They sell those items in different places along with local wild and cultivated economic plants in local market. But, all plants species are influence in their habitat and extensively

used by local people for different purposes. Man made influence posed as a threat on those plants. These are mainly anthropogenic activities which are fishery, tourism, setting of industries which cause a great loss of vegetation as well as natural ecosystem fragile. People destroy flora knowingly or unknowingly here and there.

Coastal areas of Purba Medinipur have fragile ecosystem and havoc vegetation which are very much important due to its patterns and types. But now a day the area is thickly populated and filled with huge number of tribal people including fishermen. They occupy the belt for their occupation. Thus a category of people destroy natural vegetation too. Natural causes like strong wind, cyclone, high tide etc. cause serious damage on ecosystem and vegetation simultaneously. The halophytic association and sand binders available near the coast are also being damaged equally. In this regard, a general overview of land pattern changes time to time and make vulnerable habitats that ruins composite diversity of ecosystem. This change may affects on the economic condition of local people as the natural resources are facing threat. Remembering these it is very important to study and monitor the vegetation, to make strategy to restore ecosystem. It is urged that coastal zone management authority, state government, Central Government and local people would take possible measures to make it pristine. By and large from our corner it is important to study natural resource for strategy development. Not only that the whole we can make an action plan to study and research on natural and planted medicinal and economically important plants that have potential valued. Vegetation of such belt may be protected in coastal belt areas to save the natural ecosystem as the situation create a challenge to the plants and people as well as humanity to make a safeguard for near future. The present study records some medicinal plants and the use value in Hijli area of Coastal Purba Medinipur. It will help to create to revive the habitual from degradation as well as to re-vegetate the land with economic and important plants for economic development of local people especially medicinal vegetables. Indeed to it's a good area to search and survey in details the use pattern of medicinal plants for various purposes under the direction posed by traditional knowledge and modern medical supervisor or doctors.

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II. STUDY AREA

Hijli is surrounded by the Rasulpur river, the last tributary of the river Hoogli at the southern and south-western margin, its feeder canal Talpati lies to the north, the river Hooghly to the east and Thakurnagar khal (small canal that joins with sea face) to the west. Beside the above, Palabani, Arabaga, Birbandar, Haludbari khal and other channels join to the Rasulpur river and Talpati khal. There is Ferry service in Talpati khal. There is a long gradually declining field or shore area from Masnad-E-Ala. Enumerable pilgrims come and stay here. A large number of vehicles also stay this place. There is a ferry service; from here many people cross to other end of the river. Petuaghat fishing harbour is seen from this point directly opposite to the Hili direction. There are large numbers of mangrove plantation. Old plantation stands found nearby. Newly planted mangroves with *Casuarina equisetifolia* plantation lies before the old mangrove plantation. Due to anthropogenic activities, new as well as old plantation is destroying day by day.

Soil erosion takes place due to modernization even excessive grazing round the year. This area is full of biological resources. Here olericulture and pomiculture are practical both in private and public land. Dry fish business is adopted by local people. Different fruits like lemon, star fruits, drumstick etc. are sold in local market and exported to other markets. This area is full of phytodiversity conserved by people in their own home gardens. Drumstick, Pandanas, *Acanthus*, *Petalium*, *Vitex*, Bamboo, *Borassus*, Phoenix, Cocos, *Terminalia*, *Tamarindus* species and other species of mixed vegetation present here. But due to anthropogenic activity vegetation is affected day by day.

III. MATERILS AND METHODS

Several ecological surveys were done in the coastal areas of Purba Medinipur during last 5 years. In this year some surveys on market field have been conducted. Survey was conducted in four ways. Field study was done at village boundary, coastal roads, canal boundary, road sides, and rice field boundary, edges near wet lands, wastelands, and open field and in the public garden of the coastal Medinipur. Study was made with quadrat method seasonally. In domestic purpose people use medicinal plants. Data sheet was made earlier and house survey was done. In each site 5 members were selected randomly and in such a way 5% sampling was done successfully to know the present status of use value of

medicinal plants along with other medicine used by them for their treatment upon ailments. Camera, pen pencil, data sheet, GPS was used along with earlier references. Dry parts of fruits, seeds, barks, roots etc were preserved with naphthalene balls. Plant identification was done with the help of standard literature (Duthie, 1960; Hooker 1892-1897, Haines, 1921-1925; Prain, 1963; Das 2007, Anonymous, 1997, 2005, 2010, 2012, 2017) The names of plants were crossed checked following Bennet, 1987. Publications consulted for last few years were Chakraborty et al. 2012; Das and Das, 2014; Das, 2013; Das, 2015. Wetland plant species were indentified with the help of fresh water vegetation of Rimer, 1984. The specimens of medicinal plants were indentified with the help of museum specimens and herbarium specimens of CAL. Herbarium specimens were prepared as per the methodology of Jain and Rao, 1977. To study use pattern of medicinal plants, different books of Government sections have been consulted. But for general consideration the common book used was Kirtikar and Basu, 1918. Herbarium specimens were collected as per the manual published by Rao and Sharma, 1990. Halophytic species have been identified with the help of manual on mangroves in India (Banerjee et al. 1986). Other literature used were Blasco (1975), Banerjee (1987), Dwivedi et al (1974), Mukherjee (1978), Naskar et al. (1978), Rao et al. (1972), Sanyal et al. (1984), Sidhu (1960), Thothatri (1981), Wahead Khan (1959), Walson (1928), Gul and Khan (1995), Subhanian et al. (2010), Jha et al. (2011) and Ahmed et al. (2011), Das and Ghosh (2017, 2018). All references are tagged 1-41 as record references.

IV. RESULT AND DISCUSSION

Medicinal Plants used by the people of Hijli is very interesting. People use allopathy, homoeopathy and ayurvedic

medicine though apply medicinal plants directly or indirectly along with other ingredients. Result revealed that 20 medicinal plants are used by the Hijli people (Table 1). The use pattern and % use of various systems of treatment at Hijli is unique. Almost all i.e. 100 % people use direct medicinal plants whether other systems used by the people are allopathic treatment (60%), ayurvedic treatment (60%), homoeopathy (20%). Most of the people under survey community use a few but along with medicinal plants (Table 2, Fig. 1). They use medicinal plants for various purposes like fever, common cold, cough, dysentery, asthma, urinary problem, acidity, allergy, constipation and to cure skin problem. Here *Cynodon dactylon* and *Centella asiatica* are commonly found almost in all places, except *Aristolochia indica* (Iswarmul).

People use medicinal plants from their home gardens. They use the plants to propagate all the plants in their home gardens through seeds, stem cuttings, from rooted stem, shoot of mother plants available nearby. People take care and use all the plants round the year. All types of medicinal plants and their parts used by the people of age group 2-65 years in the said community in Coastal Purba Medinipur. Result revealed that a total 20 different species of medicinal plants used by the people of Hijli for ready use to treat different ailments (Table 1). So, there is a huge scope to study use value and potential dose of medicinal plants in near future. Side by side this would conserve the traditional knowledge as well the advice of modern medicine men in general to cure the problems and to use the value of biodiversity too in a regional basis at Hijli coast.

Table 1. Medicinal plants used by villagers at Hijli of Purba Medinipur, West Bengal, India

Sl. No.	Scientific name of plant	Parts used	Medicinal use or Purpose of use as medicine
1.	<i>Achyranthes aspera</i>	Leaf, root	Dysentery, root paste stops bleeding after abortion.
2.	<i>Aegle marmelos</i>	Leaf, green fruit	Juice cures acidity.
3.	<i>Aloe vera</i>	Succulent leaf	Fleshy part used in constipation.
4.	<i>Alstonia scholaris</i>	Stem bark	Water soaked decoction of bark reduces acidity.
5.	<i>Andrographia paniculata</i>	Leaf, twig	Dry leaves soaked in water over night and taken to cures scab.
6.	<i>Annona squamosa</i>	Root, seed	Root used in acute dysentery, seed paste is used as abortifacient.
7.	<i>Aristolochia indica</i>	Roots, leaves	Cures intermittent fever and asthma.
8.	<i>Asparagus racemosus</i>	Tuberous root	Cures diarrhea and dysentery.
9.	<i>Ayapana triplinervis</i>	Whole	Juice used to lower the blood pressure.

10.	<i>Azadirachta indica</i>	Leaf	Cures skin problem, rash, allergy.
11.	<i>Centella asiatica</i>	Leaves	Juice cures dysentery.
12.	<i>Curcuma longa</i>	Rhizome	Decoction treats Ascariasis.
13.	<i>Cynodon dactylon</i>	Leaf	Decoction or fresh leaf juice cures dysentery.
14.	<i>Enhydra fluctuens</i>	Leaves	Leaf juice cures dysentery.
15.	<i>Hemigraphia hirta</i>	Leaf	Decoction used to reduce gas problem and intestinal problems including abdominal pain.
16.	<i>Justicia adhatoda</i>	Leaf	Cures common cold and cough.
17.	<i>Litsea glutinosa</i>	Leaf	Cures urinary problem.
18.	<i>Ocimum sanctum</i>	Leaf, seed	Used in cough, cold and fever.
19.	<i>Sesuvium portulacastrum</i>	Leaf	Antidote to poisonous fish sting.
20.	<i>Suaeda maritime</i>	Twig, leaf	Cooked plant used in constipation.

Note: Data Collected from field on the basis of requirements using data format provided by us.

Table 2 Rating of use value of medical treatments used by people of Hijli in Purba Medinipur, W.B.

Medical treatment	Respondents	Respondent's reference tally marks	Use frequency value of medical treatment
Homoeopathy	5	I	20%
Allopathy	5	III	60%
Ayurveda	5	III	60%
Medicinal Plants	5	IIII	100%

Note: Survey report based on 5% sampling data.

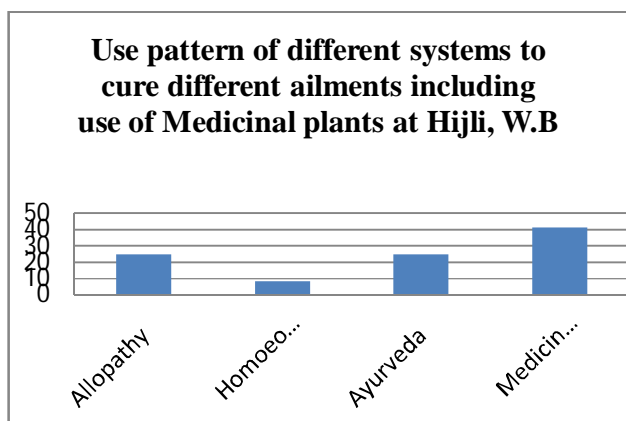


Fig. 1 Various use pattern including use of medicinal plants under different systems at Hijli to cure various ailments of villagers in Purba Medinipur district.



Fig. 2 Hijli coast with large Mangrove planation (Old stock is now degrading)

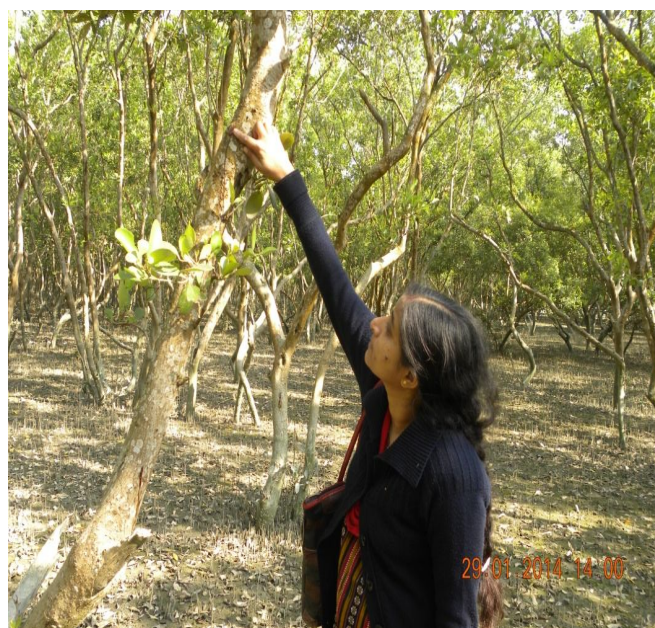


Fig. 3 Author showing lichen which indicates healthy ecosystem of Hijli area



Fig. 4 Ecofragile region showing land alteration by natural way at Hijli coast



Fig. 5 Hemigraphis hirta in wild habitat and important medicinal plant



Fig. 6 Aeluropus lagopoides–mangrove grass found on ground near coast of Hijli

V. CONCLUSION

Ecosystem damage and soil erosion is a general phenomenon due to over population, land use pattern,

pollution and global warming. It is parallel that increasing population needs increasing resource but it is depleting day by day due to anthropogenic and natural causes. As a result, species are destroying from habitats and one microclimate is converting in to a new habitat. In some places, new halophytic plantations are uprooted and destroying by grazing. Renovation of canal system has created damage to associated flora. Coastal banks are facing hazards by tidal flow day by day. As a result natural vegetation and medicinal plants are vanishing locally. Therefore, due to non availability of species of medicinal plants or their population size people are creating home gardens to protect these for their own purpose. So, it is highly recommended that each and every people should create home medicinal plant garden or kitchen garden to get valuable medicinal plants which are very essential to protect us even to cure various ailments that is easy and less time consuming even non costly.

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