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Utilization of Mangrove Plant by Local Coastal Community in Maharashtra

Swati Kharade and Saima Shaikh

Head, Department of Botany, AIJ Degree College of Science, Murud-Janjira, Maharashtra, India

M.Sc. I Botany Student, AIJ Degree College of Science, Murud-Janjira, Maharashtra, India

E-mail: swatideshmukh814@gmail.com

Abstract: *The present paper deals with the study of utilization of mangroves diversity along different sites of Maharashtra coastal region, India. Mangroves along the coast of Maharashtra have well developed ecological and economical potentials, therefore an attempt have been made to survey on utilization of mangrove plant by local coastal community. It was observed that the Sonneratia alba, and Avicennia marina species are commonly utilized. The increasing population in the areas of coastal Maharashtra with increased demands of resources especially natural resources has forcefully reducing the area of mangroves. The piece of work is significant in gathering information of mangrove plants and aware about degradation of mangroves.*

Keywords: Mangroves, Degradation of mangroves, utilization

I. INTRODUCTION

Usually, mangroves are rich in polyphenols and tannins. Mangrove leaves contain phenols and flavonoids. Substances in mangroves have long been usedin folk medicines to treat diseases. Extracts of variousparts of mangrove plants have significant activity againstanimal, human and plant viruses including humanimmunodeficiency virus. The comprehensive uses of various mangrove plant species in human sufferings provide strong evidence of their healing power and demands further research.

Mangrove plants grow up at the edge between sea and land in subtropical and tropical regions of the world. Where they exist in high temperature, strong winds, extreme tides, high salinity, and anaerobic soil. Mangrove plant tolerate high salt concentration and remain submerged in saline water. The mangrove plants are natural alternative route for new drugs, because of their low production costs, novelty, and structural diversity. Mangroves arewoody treesor shrubsand the salt marshhalophytes areherbs and sledges. The mangrove plants aredistributed in 121 countries. Mangroves are used in traditional and medicine for the treatment of many diseases. Mangrove forests are among one of the world's most productive tropical ecosystems and are highly potential. Because theecosystem is always under stress which leads to the production of certain compounds for their survival.

Mangrove plants have been used in folklore medicines and extracts from mangrove species have proven inhibitory activity against human, animal and plant pathogens. Several species of mangrove produce bioactive compounds that may control microbial growth. Secondary metabolites likealkaloids, phenolics, steroids and terpenoids have beencharacterized from extracts mangroves and have toxicological, pharmacological and of ecological importance. However, these studies are restricted to the mangroves of muddy region. Only few species like Pemphisacidula aregrowing only in coral sand substrates. Traditionally, the mangroves have been exploited for firewood and charcoal and their uses include construction of dwellings, furniture, boats and fishing gear and production of tannins for dying and leather production. Mangroves provide food and a wide variety oftraditional products and artefacts for mangrove dwellers. The mangrove leaves are useful contributors to the nutrient system of the mangrove environment. It is known that mangrove leaves contain amino acids, vitamins andminerals which helps in the growth and development of marine organisms.

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Therefore, it is necessary to gathered all information on utilization of mangroves plants at the micro level. Assessment studies will be beneficial for monitoring the sites periodically. Thus, a present attempt has been made to survey on utilization of mangrove plant by local coastal community in various sites of Maharashtra.

II. MATERIAL AND METHODS

Survey on utilization of mangroves plants was carried out in 10 sites of coastal regions of Maharashtra between August 2023 and March 2023. Information was obtained through interviews using semi- structured questionnaires. Field excursions with traditional healers and herbal medicine collectors were carried out. Descriptive statistics were used to present the data. Fidelity ratios and Informant consensus agreements were calculated.

III. RESULT AND DISCUSSION

The mangrove ecosystem in coastal region playing significant role, provide various benefits to the costal community. The various species of mangrove are utilized by local people along the coasts of Maharashtra. The traditional uses of mangroves are capturing fishery, fuel, fodder, tannery, and medicines. Medicinal importance of mangroves is known to local people since ancient time. The medicinal use of mangroves has a wide spectrum. Different species of mangroves are used for different medicinal purposes to cure certain disorders. In 20th centuries Nadkarni, Kirtikar and Basu have given a detailed account of mangrove species for their medicinal importance and mode of action of few species. Watt has reported the mangrove use by local inhabitants. Naskar and Guha Bakshi stated that the mangroves are widely used in Sundarbans for curing diseases on traditional basis.

Table no. 1 shows the major sites of mangroves visited in present work.

Table 1: Major sites of mangroves in Maharashtra

Sr. No.	Name of District	Areas of mangroves visited
1	Raigad	Korlai
2	Raigad	Hareshwar
3	Ratnagiri	Anjarle
4	Ratnagiri	Vijaydurg
5	Sindhudurg	Achara
6	Sindhudurg	Vengurla
7	Mumbai	Mahim
8	Mumbai	Malad
9	Thane	Vasai
10	Thane	Dahanu

Numerous Studies have been documented in view of the status, biodiversity, and distribution. From Table- 2 it is clear that mangroves are useful for medicines. Their detailed use should be focused. The tables represents that the different species of mangroves are medicinally used on traditional basis along the study area. Naskar has identified many mangrove species of Sundarbans delta from village folk and folk literature for medicinal use. Similar technique has been used in present study.

Alex Rodger has given anelaborative account of mangrove forest plants[13]. He hasmentioned the traditional uses of mangroves species like*Rhizophora mucronata*, Acanthus *ilicifolius*, *Avicenniaofficinalis*, *Excoecariaagallocha* for snake bite,rheumatism, aphrodisiac and epilepsy.*Avicennia officinalis*, *Derris trifoliata*, *Excoecariaagallocha* and *Ipomoea pes-caprae* have also reported theuse of as purgative on swelling of hand and feet and fish-poison [14]. Bandaranayake has given an account oftraditional uses of mangroves. He stated that mangrovesprovide food and wide variety of products includingmedicines. The fruits of *Avicennia alba* are plastered on to boils andtumors in India while the bark used to treat skin problemsespecially scabies in Indo-china region. Similarly, resinfrom bark is used against shake bite in Philippines [16]. Mangrove plants are beneficial to cure sores, leprosy,headache, snake-bite, boils, and ulcers [17]. Severalmangrove species are used in indigenous medicines such asBrugueriagymnorrhizia for diarrhoea,

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*Acanthus ilicifolius*for asthma and rheumatism, *Rhizophora mucronata* forangina and *Excoecariaagallocha* for leprosy. [18]

Table 2: Mangroves species in Maharashtra and its uses

Sr. No.	Botanical Name	Common Name	Family	Part used	Uses
1	*Avicennia marina* (Forssk.) Vierh.	Tivar	Avicenniaceae	Leaves	Rheumatism, small pox, ulcers, fodder for livestock
2	*Avicennia officinalis* L.	Tivar	Avicenniaceae	Root, Bark & Seeds	Used in small pox, boils, abscesses, skin parasites and wounds Joint pain, Urinary disorder,
3	Rhizophora mucronate Poir	Kandal	Rhizophoraceae	Bark	Used in diabetes, leprosy Hemorrhage, dysentery, ulcer, febrifuge
4	*Acanthus ilicifolius* L.	Marandi	Acanthaceae	Roots, Tender shoot &Leaves	Used in snake bite, asthma, cough, nerve tonic, for dressing wounds and boils, aphrodisiac, diabetes rheumatism. Skin disease, kidney stone, small pox & ulcer snake poison
5	*Rhizophora apiculata*	Kandal	Rhizophoraceae	Leaf, Fruit	Astringent for diarrhea, vomiting, Nauses hepatitis, insecticide
6	*Bruguiera cylindrica*L.	Kandal	Rhizophoraceae	Bark,	used as astringent, hepatitis
7	*Bruguieragymnorhiza* L.	Ekmane	Rhizophoraceae	Bark, Fruit	eye medicine, used as astringent
8	*Kandeliacandel* L. Druce	Kandal-guriya	Rhizophoraceae	Bark	Used in diabetes
9	*Ceriops tagal* (Perr) C.B.Rob.	Kirkiri	Rhizophoraceae	Bark, Shoot,Fruit	Used in hemorrhage, Ulcers
10	*Sonneratia alba Kurz.*	Pandharichipi	Sonneratiaceae	Fruit	Used in hemorrhage, swellings
11	*Sonnertia apetala L.*	Chipi	Sonneratiaceae	Fruit	Swellings
12	*Sonneratiacaseolaris* Engler	Chipi	Sonneratiaceae	Fruit	Fruits edible and isused to prepare a local cuisine and is valued for its sour taste. Fruit extract is used as an anthelmintic medicine
13	*Lumnitzera racemose*Willd.	Huri	Combretaceae	Bark	Used in asthma, anti-fertility, diabetes
14	*Xylocarpus granatum* Koenig	Samudraphal	Meliaceae	Leaves, seeds, and bark	Used for treating jaundice, cholera,dysentery, fever, cough in the newly bornchilds, dysentery, tonic, astringent, forbreast cancer,

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					cholera, diarrhoea.
15	*Exoecariaagallocha L.*	Phungi	Exphorbiaceae	Root, Branches &Leaves	Used in epilepsy, Ulcers & Leprosy
16	Aegicerascorniculatum	Sugandha	Mysinacene	Root, Bark &Stem	Used as fish poison
17	*Heritieralittoralis* L.	Sundri	Malvaceae	Seed	Seed is grounded and used to treat dysentery.
18	*Dolichandronespathacea* (L.) Schum	Gorshingiah	Bignoniaceae	Seed	Seed powder is used as antiseptic and in enteric spasms
19	*Acrostichumaureum* L.	Kateri	Pteridaceae	Rhizomes leaves	Boils, wound

Forest Department of Maharashtra reported that there are 20 species of Mangroves that have found in Coastal districts of Maharashtra. Most of the people from all visited sites poor knowledge about mangroves as an ecosystem is more serious in terms of the future degradation of the mangroves. The study reveals that, 35.64% respondents do not know the function of mangroves. About 32.70% respondent know only one function of mangroves i.e., Wind Breaker. more than half i.e., 53.83% of the respondent used mangroves as a fuel wood. Besides that, 5% respondents are used for other purposes like construction, fishing etc. Costal vegetation is a good source of anticancer drugs. This coastal vegetation comprises mangroves, salt-marshesand sand-dunes. They have mentioned the role of mangroves species like *Avicenniaafricans*, *Brugueriaparviflora*, *Bruguieraexaristata* [21].

Differentiate investigations revealed that mangrove growth and its area is decreasing due to change in climate and human interventions. Global warming is one of the dominant events of climate change which causes sea level rises and tends toreduce the mangrove swamps. Future models and predictions also indicate that sea level is increasing day by day and influences on the growth and health of mangroves.

IV. CONCLUSION

The present investigation reveals the traditional uses of nineteen species of mangrove flora. It is seen that these plant parts are used in variety of ailments including ulcers, boils, stomach problems, urinary diseases and many others. Growth of modern medicine along with the cultural transgression of developing society with constrains imposed onresource utilization due to conservation issues, is putting these ancient traditions under enormous stress. But these practices shed light into the hidden aspects of utilization of different natural products from plants, which can be benefitting to humans and can pave the way for development of different sustainable medicinal products with minimum post-therapeuticcomplications.It can be concluded that mangrove species are most important and useful to mankind. In context with the present status of mangroves, it is necessary to protect such natural resources by conducting the awareness programmed; and implementing strict rules and regulation.

REFERENCES

[1]. Alvin A, Miller KI, Neilan BA. 2014.Exploring the potential of endophytes from medicinal plants as sources ofantimycobacterial compounds. Microbiol Res.169:483–95.

[2]. Amarasinghe, M.D. (1988). Mangrove ecosystems: Socio-economic status of the human communities of selected mangrove areas on the west coast of Sri Lanka, UNESCO publications, New Delhi, 19.

[3]. Bandaranyake, W.M. (1995). Survey of mangrove plants from Northern Australia for phytochemical constituents and UV-absorbing compounds. Current Topics in Phytochemistry (Life Science Advances) 14: 69–78.

[4]. Bhimba, B.V., J.Meenupriya, E.L.Joel, D.E.Naveena,S. Kumar and M. Thangaraj, (2010). Antibacterial activity and characterization of secondary metabolites isolated from mangrove plant Avicennia officinalis. Asian Pacific Journal of Tropical Medicine, 3(7): 544-546.

[5]. FAO (1982). Management and Utilization of Mangrove in Asia and Pacific. Food and Agriculture Organization of the United Nations, FAO Environment Paper No.3, Rome, 26

[6]. FAO (1985). Mangrove management in Thailand, Malaysia and Indonesia. Food and Agriculture Organization of the United Nations, FAO Environment Paper No.4, Rome, 59 .

[7]. Field, C. (1995). Journeys amongst mangroves. International Society for Mangrove.

[8]. K. Kathiresan and V. Ravi,1990. "Seasonal changes in tannin content of mangrove leaves," Indian Forester, vol. 116, no. 5, pp. 390–392, .

[9]. Kandasamy S, Kandasamy K. 2014.Antioxident activity of the mangrove endophytic fungus (Trichoderma sp). J Coastal Life Med; 2(7):566-70.

[10]. Kilani, A.M., 2006. Antibacterial assessment of whole stem bark of Vitex doniana against some Enterobactriaceae. African Journal of Biotechnology, 5: 958-959

[11]. Kirtikar, K.R.and B.D.Basu, (1991). Indian medicinal plants. Lalit MohanBasu Publishers, Allahabad, India, pp: 1-2793 I-IV.

[12]. Knox, G.A.and Miyabara, T. (1984). Coastal zone resource development and conservation in South East Asia, with special reference to Indonesia. UNESCO, Jakarta, Indonesia, 182 pp.

[13]. M. A. Hossain, S.Panthi, M.Asadujjaman, S. R. Khan, F. Ferdous, and S. K. Sadhu, "Phytochemical and pharmacological assessment of the ethanol leaves extract of Heritiera fomes Buch. Ham. (Family-Sterculiaceae)," Journal of Porphyrins and Phthalocyanines, vol. 2, pp. 95–101, (2013).

[14]. M. Premanathan, H.Nakashima, K.Kathiresan, N.Rajendran,and N. Yamamoto, "In Vitro anti human immuno deficiency virus activity of mangrove plants," Indian Journal of Medical Research, vol. 103, pp. 278–281, (1996).

[15]. M. Spalding, "Te global distribution and statusof mangrove ecosystems," in International News Letter of Coastal Management-Intercoast Network, pp. 20–21, 1st edition, (1997).). Soxhlet extraction of mangrove and biological activities of extracts. Kyushu

[16]. Miki, T., T. Sakaki, M. Shibata, Y. Inukai, M. Hirosue, Y. Ikema and S. Yaga, (1994 Kogyo GijutsuKenkyushoHokoku, 53: 3347-3352

[17]. Mishra, P.K., J.R.Sahu and V.P. Upadhyay, (2005). Species diversity inBhitarkanika mangrove ecosystem in Orissa, India. Lyonia, 8(1): 73-87.

[18]. Muhammed Habeebulla and MalarkodiVelraj (2018) Potential anti-diabetic mangroves in Kerala, India: A Review Int. J. Res. Ayurveda Pharm. 9 (4), DOI: 10.7897/2277 4343.094142.