e-planet **15** (1): 84-92 (June 2017)

Ethnobotanical Study of Malyagiri hill ranges, Odisha, India

M.K. PRADHAN [1] AND R.K. NAYAK [2*]

[1]*Dept. of Botany, N.C.Autonomous College, Jajpur– 755001*

[2]*Dept. of Environmental Science, F.M. University, Balasore – 756020*

**nayak_ranindra@yahoo.co.in*

Date of receipt: 04.05.2017 Date of acceptance: 30.06.2017

ABSTRACT

Malyagiri hill ranges located on the south of Pallahara town of Angul district in the state of Odisha is endowed with rich with flora and fauna. This area is rich with large number of medicinal plants and plants of other socio-economic importance. From the past floristic studies conducted by earlier workers it is evident that intensive floristic studies have not been conducted in this region. Large number of tribal people also inhabit around Malyagiri and its periphery. These people are utilizing various plants and plant products for medicinal and other purpose. Thus this area is also much rich with indigenous knowledge which is on the verge of extinction due to the advent of modern Allopathic system of medicine. Keeping these facts in mind, intensive floristic as well as ethnobotanical studies have been undertaken in various locations of this region. About four hundred medicinal plants have been collected and identified from different locations of this region. During the present investigation it is evident that large number of medicinal plants are found to be present in this region which are much useful for herbal drug industry. Some species are also on the verge of extinction in this region due to habitat loss. As such conservation and sustainable utilization of medicinal plants is an urgent need for the maintenance of ecological balance in this region.

KEY WORDS: Ethnobotanical study, Malyagiri hill ranges, medicinal plants, conservation

INTRODUCTION

Malyagiri hill ranges belong to Eastern ghats of India which lies between 23' 30'' N latitude and 85° 16' 58'' E longitude. It is Located in Pallahara sub-division of the Angul district under Deogarh forest division in the state of Odisha (Fig. 1). Malyagiri reserve forest spread over an area of 115sq km. The whole area is charming with rising and falling hills interspersed with small plane and winding strip of valleys. The area is rich in flora and predominant species of sal is an example of tropical dry deciduous forest (Champion and Seth 1968). The mountain heights up to 1187 mt (3894ft.) which contributes the second highest mountain in Odisha(Harish Singh and Gopal Krishna).These are four perennial water fall with dense forest in the northern part known as '' Nagira''. These provide congenital niche for luxuriant growth of various type of plant species in this tropical and sub -tropical forest (WCMC-1992). The Lord Shiv temple at the base of Khuludi reserve forest, with perennial water fall adds the natural beauty making it a tourist place. The soil of Malyagiri ranges are mainly red and form clays and clay loams in the valleys (Patra and Choudhury, 1989). The hill ranges experience an extreme climate comprising 3 distinct season summer,

rain and winter. It enjoys an average rainfall of 1421 mm. The highest temperature is 43.9°C recorded in May and it drops to 14.6 °C in December.

Malyagiri hill ranges harbours tropical dry deciduous and moist deciduous forest (Champion and Seth, 1968) of Eastern Ghats India. The wide range of topographic and climatic conditions favour the luxurious growth of vegetation in the hill ranges (Patra and Choudhury, 1989). Most of the plants have immense medicinal values. Due to over exploitation of medicinal plants, for fuel wood, habitat destruction, plant diversity decreases at alarming rate (Hare et al.,. 1997, Sahu et al., 2010). Due to its peculiar geographical locations the state of Odisha is endowed with diversified vegetation. As such quite a good number of ethnobotanical work has been carried out in different parts of the state (Brahmam and Saxena, 1990; Sahoo et al., 2016; Saxena and Dutta, 1975; Saxena et al., 1990). However, not much ethnobotanical work has been carried out in Malayagiri hill ranges. Keeping the above fact in mind an ethnobotanical exploration has been carried out in different areas of the Malyagiri hill ranges and the present paper is the outcome of some of the result of this investigation.

MATERIALS AND METHODS

Malyagiri Hills lies between $21^{0}23'37''$ N latitute and $85^{0}16'58''$E longitute (Fig.1)

Literatures pertaining to past floristic studies in the Malyagiri hill ranges have been consulted to have a clear idea about the distribution and the status of the vegetation in past. The herbarium of the Central National Herbarium has been consulted to have a clear idea about the abundance and distributional patter of different species in this region.

Regular field trips have been conducted in different seasons of the year to identify plants of ecological, medicinal and other socio-economic importance along with distributional data in and around different areas of the Malyagiri hill ranges

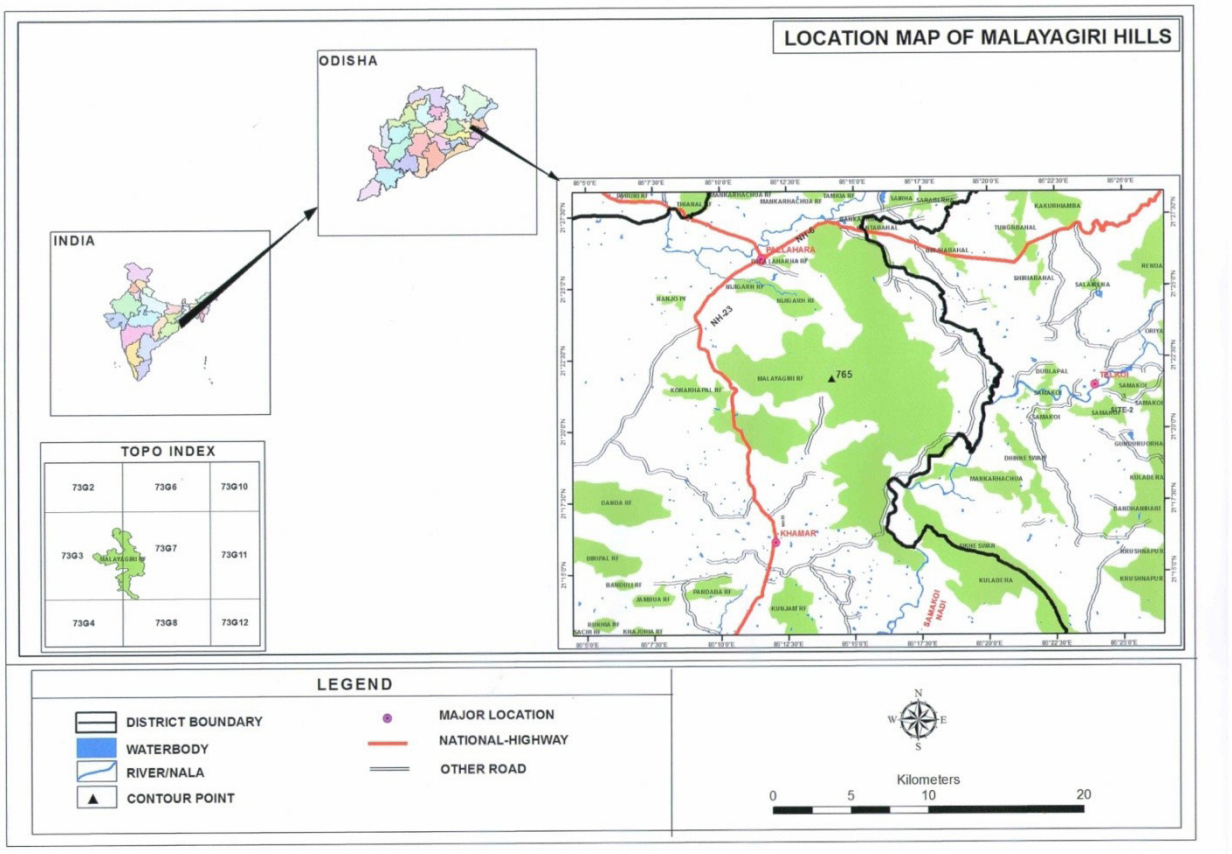

Fig. 1 : Map of Malyagiri hill ranges

such as Jharasahi, Sapajhara, Jambua, Jharbeda, Khuludi, Phulabadi, Jamara etc. Special attention has been given to the sociability, distributional pattern and abundance, flowering and fruiting time. Plants of ethnobotanical importance were collected for the preparation of herbarium. Ethnobotanical informations were recorded from the local people, vaidyas and medicinal practitioners .

RESULTS AND DISCUSSION

In the present investigation, intensive as well as extensive floristic and ethnobotanical surveys have been conducted in and around different areas of the Malyagiri hill ranges to identify plants of ecological, medicinal and other socio-economic importance along with distributional data. Till now as many as 436 species have been collected and identified after consulting the regional floras (Haines, 1921-25; Mooney, 1950; Saxena and Brahmam, 1994-96).

The distribution and utilization of 50 potential medicinal plants found in different areas of this region have been presented over here. The species are enlisted alphabetically. Medicinal properties of the species have been authenticated by consulting standard literatures such as Kiritikar and Basu (1935), Chopra et al. (1956), Agrawal and Ghosh (1985), Satyavati et al. (1987), Warrier et al. (1995). The locality and the field number of the taxon have been given before the description of the medicinal importance. Illustrations of some important medicinal plants have been shown in Fig. 2-25. In particular, extensive survey was undertaken at Phulabadi, a very cold zone of Malyagiri. It was noticed that there have been luxuriant growth of *Mesua ferrea* L. which nearly occupies 4 sq. km. of the area. Hence, this has been established to be the unique feature of the bio-diversity of the region.

Fig. 1. *Michelia champaca* L.

Fig. 2. *Argemone mexicana* L.

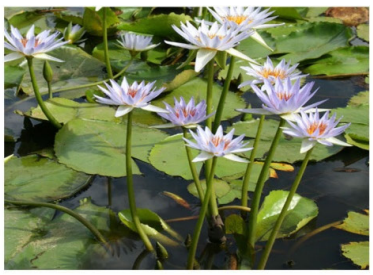

Fig. 3. *Nymphaea nouchali* Burm.

Fig. 4. *Caparis zeylanica* L.

Fig. 5. *Crateva magna*(Lour)Dc.

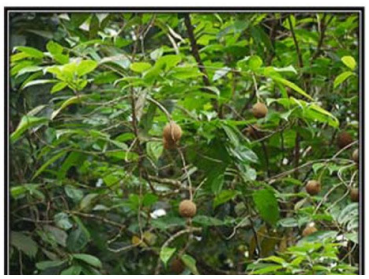

Fig. 6. *Hydnocarpus laurifolia (Denst.)*Sleumer

Fig. 7. *Dillenia indica* L.

Fig. 8. *Mesua ferrea* L.

Fig. 9. *Cissampelos pareira* L.

Fig. 10. *Stephania japonica (Thunb.)* Miers

Fig. 11. *Tribulus Terestris* L

Fig. 12. *Averrhoa carambola* L.

Fig. 13. *Oxalis corniculata* L.

Fig. 14. *Sapindus emarginata* Vahl.

Fig. 15. *Linum usitatissimum* L.

Fig. 16. *Shorea robusta* Gaerth.

Fig. 17. *Chloroxylon swietiana* Dc.

Fig. 18. *Ailanthus excelsa* Roxb.

Fig. 19. *Melia azedarach* L.

Fig. 20. *Celastrus paniculata* Willd.

Fig. 21. *Olax scandens* Roxb.

Fig. 22. *Cissus quadrangula* L.

Fig. 23. *Abelmoschus moschatus* Medic.

Fig. 24. *Sida acuta* Burm.

Table 1. Enumeration of medicinal plants in Malyagiri hill ranges.

Sl. no.	Botanical name Specimen no.	Family Locality	Local name	Life form	Parts used	Ethnobotanical importance
1	*Abelmoschus moschatus* Medic. 1047	Malvaceae Naunposi	Banabhendi	Shrub	Leaf	Hysteria and nervous troubles.
2	*Ailanthus excelsa* Roxb. 1043	Rutaceae Nuguda	Mahala	Shrub	Bark	Intestinal tape worm, constipation, stomach disorder
3	*Argemone mexicana* L. 1006	Papaveraceae Sapajhara	Agara	Herb	Stem	Juice used for healing wound
4	*Averrhoa carambola* L. 1001	Averrhoaceae Raipal	Karamanga	Shrub	Fruit	Treatment of dysentry
5	*Bacopa monnieri* L. Pennell. 1455	Scrophulariaceae Tampar	Brahmi	Herb	Leaf Stem	For cough, fever and constipation
6	*Caesalpinia bonduc* L. Roxb. 1072	Caesalpiniaceae Tampar	Gilla	Herb	Root	Paste in dysentry
7	*Casearia graveolens* Dalz. 1018	Flacourtiaceae Padadiha	Giridi	Tree	Stem	Prepared comb used to prevent growth of lice
8	*Caparis zeylanica* L. 1002	Capparaceae Chhamunda	Asadua	Shrub	Leaf	Used as sedative, stomatic and antidiuretic

32	*Oxalis corniculata* L. 1041	Oxalidaceae Jambua	Ambiliti	Herb	Leaf	Juice is used locally for treatment of warts
33	*Pongamia pinnata* (L.) Pirre. 1120	Fabaceae Andhari	Karanja	Tree	Seed	Seed paste and oil is used to treat painful rheumatic joints
34	*Prosopis cineraria* (L.) Druce 1096	Mimosaceae Nuagaon	Shami	Tree	Flower	Powder eaten by women to prevent miscarriage
35	*Purpurea tuberosa* (Willd)Dc. 1132	Fabaceae Chandposi	Bhuin kakharu	Herb	Leaf Stem	Used as demulcent, refrigerant and in fever
36	*R. serpentina* (L.) Bent. 1598	Apocyanaceae Balimi	Patalagaruda	Herb	Root	Used for blood pressure and snake bite
37	*Rauvolfia tetraphylla* L. 1316	Apocyanaceae Dandahuli	Patalagaruda	Herb	Leaf Stem	Plant extract mixed with castor oil used for chronic diseases
38	S*apindus emarginata* Vahl. 1030	Sapindaceae Shikheswari	Rithaphala	Shrub	Leaf Fruit	Used in asthma, rheumatic arthritis
39	*Saraca asoca* (Roxb.)de Wilde. 1079	Ceasolpineae Aluri	Ashoka	Tree	Bark	Used to treat for regular menstruation
40	*Shorea robusta* Gaerth. 1034	Dipterocarpaceae Malyagiri	Sal	Tree	Seed	Seed paste mixed with white egg is very useful for relief rheumatic pains
41	*Sida acuta* Burm. 1060	Malvaceae Balimi	Bajramuli	Herb	Root	Used in nervous and urinary diseases, disorder of blood and bile
42	*Sida cordata* (Burm f.) Borssum 1005	Malvaceae Raipal	Bajramuli	Herb	Root	Paste is used in leucorrhoea, sciatica and headache
43	*Stephania japonica* (Thunb.)Miers.ann 1024	Menispermaceae Malyagiri	Sandhimali	Herb	Leaf	Useful in oral and dental diseases
44	*Swertia angustifolia* Buch. 1396	Gentianaceae Kadalibadi	Chereita	Shrub	Leaf	Used in bilary disorder and constipation
45	*Syzygium cumini* (L.)Skeels. 1165	Myrtaceae Jamara	Jamukoli	Tree	Bark	Fresh bark juice mixed with milk used in diarrhoea
46	*Tadalia asiatica* (L.)Lam. 1056	Rutaceae Kantala	Tundapoda	Shrub	Stem	Used in treatment of cough and inflammation
47	*Terminilia arjuna* Roxb. Ex Dc. 1260	Combretaceae Andhari	Arjuna	Tree	Bark	Used in heart diseases
48	*Terminilia chebula* Retz. 1272	Combretaceae Jharasahi	Harida	Tree	Fruit	Used to gargle to treat infamation of mucous membrane of mouth
49	*Tricosonthes tricuspidata* Lour. 1238	Cucurbitaceae Susubanali	Mahakala	Tree	Root	Bitter,thermogenic,puragative
50	*Uraria picta* (Jacq.)Desv. 1146	Fabaceae Kadalibadi	Iswarjata	Shrub	Fruit	Applied to sore of children

The medicinal plants placed in vulnerable, endangered categories have been recorded in the Table-2.

Table 2: Status of some medicinal plants in Malyagiri hill ranges

Sl. no	Botanical name	Family/Locality	Local name	Life form	IUCN status
1	*Abelmoschus moschatus*	Malvaceae Naunposi	Banabhendi	Shrub	Vulnerable Medic.
2	*Celostrus paniculata* Willd	Celastraeceae. Balimi,1051	Pengu	Shrub	Abundant
3	*Desmodium gangeticum* (L.)DC.	Fabaceae. Raipal,1098	Shalaparni	Shrub	Vulnerable
4	*Eclipta prostrata* (L.)L.Mont	Asteraceae. Andhari,1284	Bhrungraj	Herb	Vulnerable
5	*Gymnema sylvestre* (Retz.)R.Br.	Asclepediaceae. Jharbeda,1362	Gudamari	Creeping shrub	Endangered
6	*Mesua ferrea* L.	Clusiaceae. Phulabadi,1027	Nageswara	Tree	Endangered
7	*Nyctanthes arbor-tristis* L.	Oleaceae. Mahurapani,1323	Gangasiuli	Shrub	Endangered
8	*Rauvolfia tetraphylla* L.	Apocyanaceae. Balimi,1316	Patalagaruda	Shrub	Endangered
9	*Swertia angustifolia* Buch	Gentianaceae. Kadalibadi,1396	Chireita	Shrub	Endangered
10	*Shorea robusta* Gaerth.	Dipterocarpaceae. Malayagiri hill,1034	Sal	Tree	Abundant

CONCLUSION

During the present investigation it has been observed that the flora of Malayagiri Hill ranges is rich with large number of medicinal plants and plants of other socio-economic importance. Large number of tribal people such as Kandha, Ganda and Sabara also inhabit around Malayagiri and its periphery. These people are utilizing various plants and plant products for medicinal and other purpose. Thus this area is rich with indigenous knowledge which is on the verge of extinction due to the advent of modern allopathic system of medicine. During the present investigation it is evident that large numbers of medicinal plants are found to be present in these regions which are much useful for herbal drug industry. Some species are also on the verge of extinction in this region due to habitat loss. As such in situ conservation of the existing vegetation as well as ex situ conservation of rare, endangered plants and sustainable utilization of medicinal plants is an urgent need of the hour for the maintenance of ecological balance in this region.

ACKNOWLEDGEMENT

The authors are thankful to the Principal of the N.C. Autonomous College, Jajpur for providing the laboratory facilities to carry out this piece of the work .They are also grateful to the Director, Botanical Survey of India, Kolkata, Director ,CSIR-IMMT, Bhubaneswar and the Director R.P.R.C., Bhubaneswar for providing the Library and herbarium facilities during the course of the work. Special thanks to the authorities of the Department of Environment and Forest, Govt. of Odisha and the local tribal and village dwellers for their cooperation during field tour to different areas of Malyagiri hill ranges.

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