

# Potential Medicinal Plants of Odisha Used in Rheumatism and Conservation

S.P. Panda<sup>\*1</sup>, H.K. Sahoo<sup>2</sup>, H.N. Subudhi<sup>3</sup> and A.K. Sahu<sup>4</sup>

<sup>1</sup> Odisha Biodiversity Board, RPRC Campus, Bhubaneswar-15, India

<sup>2</sup> Vasundhara, Bhubaneswar, India

<sup>3</sup> Central Rice Research Institute, Cuttack, India

<sup>4</sup> SPMU, ICZMP Odisha, 108 Surya Nagar, Bhubaneswar, India

## ABSTRACT

Odisha, one of the coastal states of Indian sub-continent is endowed with potential medicinal plants owing to its peculiar topography and geographically distributed various microclimatic locations. But due attention was not paid to explore these life forms and alkaloids present in them having need specific chemical constituents. These natural resources are neither being properly exploited and nor even utilized their economic benefits from these Godly life forms. Due to anthropogenic over exploitation, many of such life forms are on the verge of being extinct or rare or vulnerable etc. It is high time to get rid of this ignorance and to plan for an optimal utilization of our nature given resources. To take such an endeavour, this paper deals with 68 medicinal plant species having significant role in curing rheumatism under 62 genera and belonging to 37 families collected from various parts of the state. The species are arranged alphabetically with their family, vernacular name, usable part (in table -1). Concurrently some conservational strategies have also been suggested before it becomes endanger or rare or extinct.

**Keywords-** Medicinal plants, Odisha, Rheumatism, Conservation.

## INTRODUCTION

Odisha is situated in the east coast of the Bay of Bengal of the Indian sub-continent and lies in between 17° 48'-22° 94'N latitude and 81°24' - 87°29' E longitude. It is the treasure house of healing herbs, which are being used in Indian system of medicine viz., Auyrveda, Siddha and Unani. However, owing to complex topography and variety of microclimatic parameters, several life forms are not coming to the forefront of common

people, out of which the plants of immense medicinal significance deserve special mention.

The mountainous forests of the Deomali hills, Gandhamardan hill range, Mahendragiri hills, Niyamagiri hill range, Malyagiri hills, Similipal Biosphere Reserve and coastal forests including the mangroves and their associates have high degree of biological diversity as well as grand repository of potential medicinal plants. These forests have been the source of

invaluable medicinal plants since the time human being realized the preventive and curative properties of plants and started using them for health care for them as well as for their pets. Many of these areas are ethnobotanically resourceful. The aboriginals depend on the forests as well as forest resources to cater their needs like food, cloth, shelter and medicine. The tribal people are not very willing to disclose their knowledge about the uses of the plant/ plant parts being important curative resources except for some commonly useful medicinal properties. In general, they maintain secrecy about the use of certain medicinal plants with a belief that the medicines will lose their healing power, if too many heads know about them.

About 400 plants are used in usual preparation of Ayurvedic, Unani, Siddha and tribal medicine. As far as the information available, these preparations are about 75% from tropical and 25% from temperate forests. Out of which, 30% of these preparations are from roots, 14% from bark, 16% whole plants, 5% from flowers, 10% from fruits, 6% from leaves, 7% from seeds, 3% from wood, 4% from rhizomes and 6% from stems but only less than 20% (including spices) such plants are cultivated<sup>1,2</sup>.

In spite of such a resourceful utility, very limited study have been done by Sahoo, Saxena *et* Dutta, Subudhi *et* Choudhury on the ethnobotany and ethnomedicine of the state<sup>6,8,10</sup>.

## METHODOLOGY

Regular field trips were carried out to different resourceful areas of important forests of the state in order to collect information regarding the distribution pattern and flowering time of the plants. Considering the important medicinal utility, the plants were collected and identified in consultation with the regional floras<sup>4,7</sup> and

monographs and preserved in the herbarium of the P.G. Department of Botany, Utkal University, Bhubaneswar. The part of the plants used to treat rheumatism and over all information of uses was gathered by the method of ethnobotanical investigation. The authenticity of the medicinal importance of the species were carefully examined by the standard literatures<sup>1,3,5,8,9,11</sup>.

During the present exploration, only medicinal plant species having broad spectrum of use in healing rheumatism were considered. In the present treatment, habit, species under genera along with their family, vernacular name, where ever available and usable parts with medicinal utility etc. were given. The families are arranged alphabetically and the species are also represented alphabetically under each family. Besides, some conservational strategies have also been provided for the medicinal plants for posterity.

## Systematic analysis

A total of 68 angiosperms having rheumatism healing properties and used by the local inhabitants especially the tribals of the forest fringe villages were collected belonging to 62 genera under 37 families (table-1). Acanthaceae is the first dominant family followed by Caesalpiniaceae, Fabaceae and Malvaceae (Fig-1). It indicates that maximum species of Acanthaceae have been utilized in healing rheumatism. Out of 37 families, 25 are monotypic i.e. represented by both single genus and species and 35 are dicot families representing 66 dicot species whereas 2 monocot species under 2 monocot families.

## CONSERVATION

From the time immemorial, Odisha was endowed with potential medicinal plants. Recently due to the increasing popularity of Ayurvedic drugs a large number of drug manufacturing companies

have been established in the country. As it is found in the practice, many of the medicinal plant collectors supply a large scale of plants/plant parts from the remote forests to the factories without knowing the status and economic importance of these plants. Now, the pressure on the forests in general and medicinal plants found in the forests in particular has been increased significantly. So, the plants are over-exploited leading in to extinction of the species. Shifting cultivation, establishment of industries, clear off of forest lands for human settlement and illegal cutting of tree species to cater various needs have accelerated the process of dwindling of many rare and endangered species.

Odisha state has a great potential to produce large quantity of medicinal products as it has wide range of eco-climatic regions. Although quite a good number of medicinal plants have been wiped away from the state due to the operation of various biotic factors coupled with other abiotic reasons, still Odisha is a grand repository of many indigenous medicinal plants. Hence, appropriate protection and conservational steps are the need of the hour. To conserve the medicinal and aromatic plants, the first step would to prepare a status report on different aspects related to medicinal plant resources in Odisha. These life forms can be conserved by developing medicinal gardens in educational and research institutions in general and Ayurvedic Hospitals in particular. Many indigenous as well as exotic species that were brought from various regions need to be conserved in the herbal gardens by government sponsorship. Modern technology can be utilized such as cryo-preservation along with traditional field gene bank process both in *in-situ* and *ex-situ* preservation practices.

In order to promote the cultivation and judicious utilization of medicinal plants, farmers as well as the tribals needs to be trained, educated with the various agro-

techniques, processing and marketing of medicinal and aromatic plants. It is quite certain that with a whole hearted effort from the government sector, this may be successful in tribal areas, which are still depending on the collection and selling of non-timber minor forest products for their livelihood.

## CONCLUSION

In India, the country people have their own traditional medical knowledge to cure different diseases. Furthermore we found that rheumatism is linked with old age people and this age group is quite experienced in due course of time and each have their method of preparation relating to their traditional origin. The traditional wisdom, embedded with strong cultural relations with nature and natural resources reconcile between conservation and medicinal plant extractions.

## ACKNOWLEDGMENT

Indebted thanks are due to the Prof. and Head, P.G. Department of Botany, Utkal University, Bhubaneswar for providing necessary library and laboratory facilities to carry out the work.

## REFERENCES

1. Agarwal YS, Ghosh B. Drug plants of India (Root Drugs). New Delhi; Kalyani Publishers, 1985.
2. Anonymus. Amruth. FRLHT, Bangalore; August 1977; 10.
3. Chopra RN, Nayar SL, Chopra IC. Glossary of Indian Medicinal Plants. CSIR, New Delhi; 1956.
4. Haines HH. The Botany of Bihar and Orissa. 6 parts, Landon; 1921-25.
5. Kirtikar KR, Basu BD. Indian Medicinal Plants. Vol (1-2). ICMR, New Delhi; 1935.
6. Sahoo AK. Plant Resources of Kandhamal district (Odisha) some suggestion to develop

- cottage industries in tribal localities. Orissa Review 1986; 43 (4) 39-44.
7. Saxena HO, Brahman M. The Flora of Orissa. Vol. (1-4), Odisha Forest Development Corporation; Bhubaneswar; 1994-96.
  8. Saxena HO, Dutta PK. Studies on the ethnobotany of Orissa. *Bull. Bot. Surv. India* 1975; 17 (1-4) 124-131.
  9. Stayavati GV, Gupta AK, Tandon N. Medicinal plants of India. Vol. (1-2), ICMR, New Delhi; 1987.
  10. Subudhi HN, Choudhury BP. Ethnobotanical studies in the district of Kandhamal (Orissa-1). *Bio-Sci. Res. Bull.* 1985; 1 (1-2): 26-32.
  11. Warriar PK, Nambiar VPK, Ramankutty C. Indian Medicinal Plants (Vol.1-5), Madras; Orient Longman Ltd.; 1994-96.

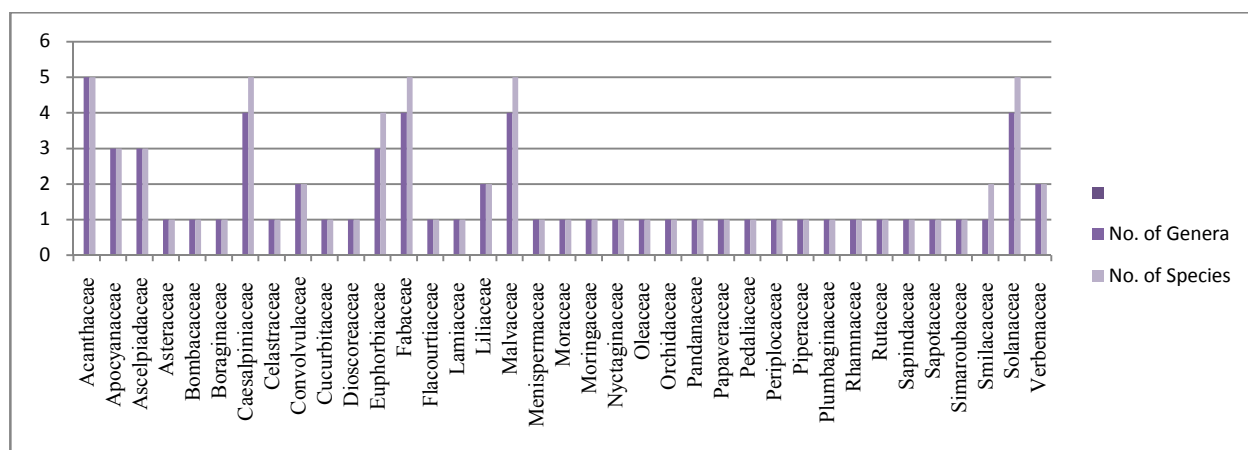
**Table 1.** Ethnomedicinal plants used to treat rheumatism

| S. No. | Name of the species                                     | Parts used    | Family          | Habit                            | Vernacular name       |
|--------|---|---------------|-----------------|----------------------------------|-----------------------|
| 1.     | <i>Acanthus ilicifolius</i> L.                          | Lv            | Acanthaceae     | Under-shrub                      | Harkach               |
| 2.     | <i>Achyranthes aspera</i> L.                            | Rt, S         | Acanthaceae     | Herb                             | Apamaranga            |
| 3.     | <i>Hygrophila auriculata</i> (Schum.) Heine             | Lv, Rt, S, WH | Acanthaceae     | Herb / Sub-shrub                 | Koilekha/Katathua     |
| 4.     | <i>Justicia adhatoda</i> L.                             | Rt            | Acanthaceae     | Shrub                            | Basanga               |
| 5.     | <i>Thunbergia fragrans</i> Roxb.                        | Rt, Lv        | Acanthaceae     | Twiner                           | Chakrakedar           |
| 6.     | <i>Cerbera odollam</i> Gaertn.                          | Fr            | Apocyanaceae    | Tree                             | Paniamba              |
| 7.     | <i>Holarrhena pubescens</i> (Buch-Ham.) Wall. ex G. Don | Bk            | Apocyanaceae    | Shrub                            | Pitakorwa             |
| 8.     | <i>Ichnocarpus frutescens</i> (L.) R. Br.               | Rt, Lv, WH    | Apocyanaceae    | Climbing shrub                   | Soyamnoi/syamalata    |
| 9.     | <i>Calotropis gigantea</i> R. Br.                       | Lv            | Asclepiadaceae  | Shrub                            | Arakha                |
| 10.    | <i>Cryptolepis buchananii</i> Roem. & Schult.           | Rt, Lv, WH    | Asclepiadaceae  | Twining shrub                    | Dudhimal/Karanta      |
| 11.    | <i>Pergularia daemia</i> (Forssk.) Chiov.               | Lv            | Asclepiadaceae  | Climber                          | Hunturi/Phala Kantaka |
| 12.    | <i>Guizotia abyssinica</i> (L.f.) Cass.                 | S oil         | Asteraceae      | Herb                             | Tilo                  |
| 13.    | <i>Bombax ceiba</i> L.                                  | Rt, Lv HW     | Bombacaceae     | Tree                             | Semeli                |
| 14.    | <i>Trichodesma indicum</i> (L.) R. Br.                  | WP            | Boraginaceae    | Herb                             | Raktokoi              |
| 15.    | <i>Bauhinia purpurea</i> L.                             | Lv, Rt        | Caesalpiniaceae | Tree                             | Barada                |
| 16.    | <i>Caesalpinia bonduc</i> (L.) Roxb.                    | S             | Caesalpiniaceae | Climber                          | Gilogila              |
| 17.    | <i>Caesalpinia crista</i> L.                            | Fr            | Caesalpiniaceae | Climber/ Thorny scrambling shrub | Putikaranja           |
| 18.    | <i>Cassia fistula</i> L.                                | Fr            | Caesalpiniaceae | Deciduous Tree                   | Sunari                |
| 19.    | <i>Cassia tora</i> L.                                   | Lv            | Caesalpiniaceae | Under-shrub                      | Chakunda              |
| 20.    | <i>Celastrus paniculatus</i> Willd.                     | S, Lv         | Celastraceae    | Climbing shrub                   | Karsano/Malkangni     |
| 21.    | <i>Ipomoea pes-caprae</i> (L.) R. Br.                   | Tb            | Convolvulaceae  | Creeping herb                    | Kansarinata           |

|     |  |             |                |  |                         |
|-----|--|-------------|----------------|--|-------------------------|
| 22. | <i>Operculina turpethum</i> (L.)<br>Silva-mano     | Rt          | Convolvulaceae | Climber/ Large<br>climbing shrub                         | Dudholoma/Nisoth        |
| 23. | <i>Momordica charantia</i> L.                      | Fr, S       | Cucurbitaceae  | Climber  | Kalara                  |
| 24. | <i>Dioscorea pentaphylla</i> L.                    | Tb          | Dioscoreaceae  | Twining herb   | Pittalokanda/Kantaalu   |
| 25. | <i>Acalypha indica</i> L.                          | WP          | Euphorbiaceae  | Herb   | Koilekha                |
| 26. | <i>Jatropha curcas</i> L.                          | Oil         | Euphorbiaceae  | Shrub  | Bamprigada/Chandrajyoti |
| 27. | <i>Jatropha glandulifera</i> Roxb.                 | S           | Euphorbiaceae  | Shrub  | Jalijalika              |
| 28. | <i>Jatropha gossypifolia</i> L.                    | Oil         | Euphorbiaceae  | Shrub  | Baigoba                 |
| 29. | <i>Abrus precatorius</i> L.                        | Rt, S       | Fabaceae       | Twining shrub  | Kaincha                 |
| 30. | <i>Derris scandens</i> (Roxb.)<br>Benth.           | Lv          | Fabaceae       | Climbing shrub   | Mohagano                |
| 31. | <i>Derris trifoliata</i> Lour.                     | S oil       | Fabaceae       | Climbing shrub   | Swanlata                |
| 32. | <i>Pongamia pinnata</i> (L.)<br>Pierre             | Lv, S, Bk   | Fabaceae       | Tree   | Karanja                 |
| 33. | <i>Pueraria tuberosa</i> (Willd.)<br>DC.           | Rt          | Fabaceae       | Climber / Liana<br>with large<br>tuberous root           | Bhuinkakharu            |
| 34. | <i>Flacourtia indica</i> (Burm.f.)<br>Merr.        | Lv          | Flacourtiaceae | Shrub  | Bhainchakoli            |
| 35. | <i>Ocimum gratissimum</i> L.                       | Lv          | Lamiaceae      | Shrub  | Bantulsi                |
| 36. | <i>Allium sativum</i> L.                           | Rb          | Liliaceae      | Herb   | Khrubeli                |
| 37. | <i>Asparagus racemosus</i><br>Willd.               | Rt          | Liliaceae      | Herb   | Satabari                |
| 38. | <i>Abutilon indicum</i> (L.) Sweet                 | Lv          | Malvaceae      | Under-shrub/<br>short pubescent<br>shrub                 | Pedipedica              |
| 39. | <i>Pavonia odorata</i> Willd.                      | WH          | Malvaceae      | Herb   | Kurubeli                |
| 40. | <i>Sida cordifolia</i> L.                          | WH          | Malvaceae      | Herb   | Bisiripi                |
| 41. | <i>Sida rhombifolia</i> L.                         | WH          | Malvaceae      | Herb   | Bajramuli               |
| 42. | <i>Melia azadirach</i> L.                          | Lv, Fr, S   | Meliaceae      | Tree   | Mahalimba               |
| 43. | <i>Cocculus hirsutus</i> (L.) Diels                | Rt, Lv      | Menispermaceae | Climber/Scandan<br>t Shrub                               | Dahdahiya/Patalagarudi  |
| 44. | <i>Ficus benghalensis</i> L.                       | Bk          | Moraceae       | Tree   | Bara                    |
| 45. | <i>Moringa oleifera</i> Lam.                       | Lv, Fr, Oil | Moringaceae    | Tree   | Sajana                  |
| 46. | <i>Boerhavia diffusa</i> L.                        | WH          | Nyctaginaceae  | Herb / Common<br>weed of sandy<br>tracts/ waste<br>lands | Goudapuruni/Punarnava   |
| 47. | <i>Nyctanthes arbortristis</i> L.                  | Lv, Fl      | Oleaceae       | Tree   | Gangaseoli              |
| 48. | <i>Vanda tessellata</i> (Roxb.)<br>Hook. ex G. Don | Rt          | Orchidaceae    | Herb   | Malang                  |
| 49. | <i>Pandanus fascicularis</i> Lam.                  | Oil         | Pandanaceae    | Shrub  | Kia                     |
| 50. | <i>Argemone mexicana</i> L.                        | WP          | Papaveraceae   | Annual Herb  | Agara                   |
| 51. | <i>Sesamum indicum</i> L.                          | S           | Pedaliaceae    | Herb   | Rasi                    |
| 52. | <i>Hemidesmus indicus</i> (L.) R.                  | Rt          | Periplocaceae  | Twining / under  | Anantamula              |

|     | Br.  |                             |                | shrub                                     |                   |
|-----|--|-----------------------------|----------------|---|-------------------|
| 53. | <i>Piper longum</i> L.                         | Fr                          | Piperaceae     | Creeping herb                             | Pippali           |
| 54. | <i>Plumbago zeylancia</i> L.                   | Rt                          | Plumbaginaceae | Under shrub                               | Chitaparu         |
| 55. | <i>Ventilago denticulata</i> Willd.            | Rt, Fl,<br>WH, Bk,<br>St, S | Rhamnaceae     | Woody climber                             | Pittoli           |
| 56. | <i>Murraya paniculata</i> (L.)<br>Jack         | Lv / Rt Bk                  | Rutaceae       | Shrub/ Small tree                         | Banamallika       |
| 57. | <i>Cardiospermum<br/>helicacabum</i> L.        | Lv, S                       | Sapindaceae    | Climbing herb<br>with tendrillar<br>hooks | Mayajala/Kanphuta |
| 58. | <i>Madhuca indica</i> Gmel.                    | S                           | Sapotaceae     | Tree                                      | Mahula            |
| 59. | <i>Ailanthus excelsa</i> Roxb.                 | Lv                          | Simaroubaceae  | Tree                                      | Mahalimba         |
| 60. | <i>Smilax perfoliata</i> Lour.                 | Rt                          | Smilacaceae    | Climbing herb                             | Mothuri           |
| 61. | <i>Smilax zeylanica</i> L.                     | Rt                          | Smilacaceae    | Climber                                   | Mutri             |
| 62. | <i>Datura innoxia</i> Mill.                    | Lv                          | Solanaceae     | Shrub                                     | Duddura           |
| 63. | <i>Datura metel</i> L.                         | Lv                          | Solanaceae     | Shrub                                     | Kala dudura       |
| 64. | <i>Nicotiana tobaccum</i> L.                   | Tabacco                     | Solanaceae     | Herb                                      | Tamaku            |
| 65. | <i>Solanum virginianum</i> L.                  | Lv                          | Solanaceae     | Herb                                      | Ankaranti         |
| 66. | <i>Withania somnifera</i> (L.)<br>Dunal        | Rt, Lv                      | Solanaceae     | Under Shrub                               | Ashwagandha       |
| 67. | <i>Stachytarpheta jamaicensis</i><br>(L.) Vahl | WH                          | Verbenaceae    | Herb                                      | Jalijalika        |
| 68. | <i>Vitex negundo</i> L.                        | Lv                          | Verbenaceae    | Shrub<br>(Quadrangular)                   | Begunia           |

**Key to the part used:** Lv: Leaves, Rt: Root, S: Seed, WH: Heart wood, Fr: Fruit, Bk: Bark, S. oil: Seed oil, Tb: Tuber, WP: Whole plant, Fl : Flower, Rb: Bulb, St: Stem



**Figure 1.** Distribution of genera and species under families