

SUSTAINABLE CONSERVATION AND DEVELOPMENT OF TRADITIONAL MEDICINAL HERBAL PLANTS IN C.G. INDIA

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Abstract: India is one of the largest producer of Medicinal Plants, also Known as Natural Botanical Garden of the World. In the country the traditional knowledge of herbal medicines well practised and widely utilized under indigenous systems like Siddha/Unani/Aryurveda. In the Chhattisgarh state utilization of Traditional knowledge (TK) of Medicinal Plants (MPS) have been practised by the Tribal Groups (TGS) inhabiting in remote regions. The study reveals that the Natural Forests including Reserve, Protected and Unclassified types covers 59,772 sq.km. area in the state. The Major medicinal plants comprises about 911 genera and 196 families. It includes climbers, Herbs & Tree species. In the study area the growth of Biota mainly depends on the terrain and climatic condition of the region. For conservation and protection of endangered Medicinal plant species the Proper Management of Medicinal Plant Conservation Areas (MPCAS) are essential to maintain the ecological and environmental balances.

Key Words: MEDICINAL PLANTS, CONSERVATION, TRADITIONAL KNOWLEDGE, AWARENESS, PROTECTION POLICY, ENVIRONMENT

1. INTRODUCTION:

In most cultures of the world, the ancient form of healing were based on Herbs. The herbal medicine is in use since Ancient time period Particularly in the cradle centre of World Civilization of Asiatic Countries like India, China and Middle East. Within the existing environment of a region, the wealth of knowledge regarding medicinal plants has been handed over to and passed down to next generation. The Indian Medicine literature "Charak Samhita" (1000BC) recorded more than 350 drugs of Herbal origin, chiefly of Wild plants. Medicinal plants (MPS) have been considered a prime health and healing source for common peoples. Being cent percent (100%) natural origin the advantages and benefits approaches several times better than the other healing system if it is properly and carefully utilized. Generally, the utilization is free from side effects as caused by synthetic compounds and chemicals used in Allopathic medicines. Under TK the experience and knowledge related to health care and healing adopted by the family and pass it to their successors of the next generation. It is well known that the Medicinal plants have been utilized in Aryurvedic Treatments long ago in India. Due to lack of social awareness and sprawling attitude of urban settlement the survival of Naturally occurring medicinal Plants became in danger and Varieties of threatened Medicinal plant species, increasing in numbers.

2. STUDY AREA:

The Chhattisgarh state is located between 80°15' and 84°20' E longitude and 17°46' and 24°5' North Latitude. It covers an area of about 1,36,000 sqkms. It consists 58,810 sqkm. of cultivable land and 59,772 sqkm. Forest area, which is the 4.14% of total area of India. It spans Maximum in NS direction 700km & 435 km in E-W direction.

3. PHYSIOGRAPHY AND LANDSCAPE:

Physiographically, the landforms includes mountain ranges, hills, plateaux, and plains. The central region exhibits undulating plains with low gradient (1-5° slope) nearly flat rock horizons. The elevation of ground surface varies between 250 metre to 330 metres AMSL. Fluvial features like flood plain, meander scar, channel ditches, Wet lands are major geomorphic zones which controls the growth of herbal varieties in riparian tract. The hill ranges of Satpura and Maikals constitutes main forest range. Satpura-Maikal landscape extends for a distance of about 500 kms. It divides Achanakamar sanctuary of C.G. and Melghat of Maharashtra. The main trees found in the forest of C.G. are Bija, Teak, Harra, etc.

4. CLIMATIC CONDITION AND RAINFALL:

The subtropical climatic condition is prevailing in the Chhattisgarh region. During Summer season the temperature varies from 40 degree to 42.5 degree Celsius. The temperature rises from the month of March during summer season. The average rainfall is 1405.3 mm. annually. Agroclimatically the Chhattisgarh state has been categorized in Zone VII i.e. Eastern Plateaux & Hills zone. It is sub divided into three subclimatic zones 1. Northern Hill zone 2. Bastar

Plateau Zone 3. Central Chhattisgarh Plain zone. The direct and indirect human interferences causes the climatic climax (forest) of the state to reach tree less grazing lands in the regions.

5. METHODOLOGY:

Under methodology various maps of S.O.I., State Forest and literature regarding the herbal plants forest Trees, Varieties properties, distribution, therapeutic uses have been Classified and field surveys were carried out at selected geomorphic zones of river banks, uplands and Hills. The existing plant species of medicinal importance have been correlated with geomorphic & agroclimatic zones. The protective and conservation practices made by Traditional knowledge of peoples have been analyzed interpreted under Awareness and protection policies guidelines.

6. FOREST & PLANT RESOURCES OF MEDICINAL IMPORTANCE:

6.1. Occurrence of Natural Forest in C.G. :

The Occurrence of Natural Forests in the Chhattisgarh state shows two major types of forests - 1) Tropical Dry Deciduous Forest (TDDF) and 2) Tropical Moist Deciduous Forest (TMDF). Both classes of forest, includes about 22 various sub types of Forests in Chhattisgarh region. The forest plant species spread over about 59,772 km² area/extent in the state. (Table)

6.2. Herbal Diversity in Chhattisgarh:

The Chhattisgarh state prominently exhibits herbal diversity in forest ranges and Floral species of various systems. Out of 1,36,000 sqkm. (13,60,000) hectare geographical Total land area of the state; About 59,772 sqkm is covered by forest. The vegetation includes numerous Varieties of plant species, etc. Some of natural forest includes - Bija, Sagon, Harra, Tendu, Teak etc. Depending upon the agroclimatic, soil, geomorphic & geologic conditions prevailing in the region. the herbal diversity is found, the major plant varieties of Medicinal plants are widely distributed in the state.

6.3. Major Medicinal plants (MPS) of C.G. :

The Major Medicinal plants (MPS) of Chhattisgarh region comprises about 911 genera and 196 families. These plants are belonging to 14 taxa at species level. It contains total 1525 species of vegetation including 1) climbers - 161 sp. 2) Hebs - 808 sp. 3) Shrubs - 262 sp. 4) Trees - 294 sp. (Table-)

7. TRADITIONAL KNOWLEDGE (TK) AND ECOLOGICAL BALANCE:

In the Chhattisgarh state utilization of Traditional knowledge (TK) of Medicinal Plants (MPS) have been practiced by the Tribal Group (TGS) inhabiting in the remote places of forest and Hills. The traditional knowledge (TK) related with the medicinal properties of the plants which occurs in the nearby vicinity of the localized natural Forests are customary and Folklore are inherent to their culture. It conserve the Biosphere traditionally & culture transmitted to the next generation which help in protection/conservation of the original/Natural form of Bio-resource. keeping with customary law and social norms/rules they are regulating the sustainable utilization of Bio-resources. The Ethnic study of Medicinal plants or ethnic pharmacology can be used as a tool for the drug discovery and mode of ascertaining conservation of plant species (Cox, 1997). The local and traditional plant users threatened to their integrity and indigenous cultures have been approached by Anthropologists but a little attention made towards orally transmitted, indigenous traditional knowledge of common peoples during researches. To search the medicinal uses by indigenous peoples, the criteria related to socio-cultural Community and importance of specific plant species should be related. Ethno pharmacology is becoming more developed and strengthened. (Berlin, 1992) with medicinal categorization of uses in different parts of world. ex-reuta chalepensis Rutaceae (Arlete plants). Based on use categories and medicinal species observations made by Matrizaria reutila L. Arteracea, use of plant species evolution (Heinrich, Michael, 2006)

In India, by adopting the basic principles of Aryurveda and judicially treatment under controls it cure the human body quickly. Aryurvedic drugs are generally called "Elixir of life" It is believed by Tribes that the location of plants for a specific ailment can be recognized by their own intrinsic power achieved by experience and knowledge in a trance from spiritual ways. TK helps in the sustainable harvest of plants and maintaining the ecological balance of local forest pockets. Traditional healing processes and preparation of Herbal Medicines widely practised in Bastar region of Chhattisgarh. It is also marked in Bastar Craft of Bell Metals. The TK and its frequent use promotes to maintain the ecological & environmental balance and give rise key to solutions for further researches and development in health healing & pharmaceutical growth.

8. AWARENESS PROGRAMMES AND PROTECTION POLICIES:

The main objective of Awareness programme is the Creating preventive and curative aspects of Herbal plants, By contributing & sharing of knowledge of traditional healing processes. Some documentation of TK by Healer persons is also useful in Awareness Programmes. Various display and exhibition-extension activities during Festivals/local Occasions have been organized by state under cultural and social programmes, including -

(1) Display - visual audio (2) Drama - play (3) Exhibition (4) Quiz competition - School levels (5) Booklet - Brouchure on medicinal plants (6) Promotive schemes funded by agencies. The ultimate effect is to connect peoples of the society and generate awareness towards benefits of medicinal plants. The legal framework is needed for protection and conservation of Medicinal plants. The existing policies includes (1) JFM Guide Lines (2) NWPE - 2014.

9. CONSERVATION MEASURES OF MEDICINAL PLANTS - (CMMP):

In order to conserve and protect the medicinal plants various ecological surveys have been conducted previously by UNDP projects under CG state Medicinal Plant Board. It has recognized seven (07) Medicinal plant Conservation, Areas (MBCAS) and two (02) Medicinal plant Development Areas (MPDAS) i.e. Bhetwa MPCA and MPDA projects. (year 2015) To ensure proper management of MPCAs/MPDAS a separate management plan of Medicinal plants has been prepared. For conservation and protection of endangered Medicinal plant species. the main varieties includes Triphala, Dasmularist, Harra, Behera, Satawar etc. are conserved and planted in other suitable, regions of the state. It has been selected to grow in Botanical Gardens, Herbal Garden. oxyzones, Aryurvedic Gardens of Govt. & Semi Govt. and NGO'S operated vegetative Growth centres. at Raipur, Dhamtari, Kanker, South Kondagaon. i.e. Southern Raipur forest Division, where Tropical Monsoonal climatic condition is dominant in the region. The seedlings of important medicinal plants are available in the states. The public sector and private sector both are benefitted with 39 Centers, including 26 in public sector & 13 in private sector in the Chhattisgarh. Also the Testing of properties of herbs and their peers the Traditional Knowledge Bank has been established under conservation measures of Traditional knowledge of the region. Ghat Pendari is a famous Conservation Area for Medicinal plants recognized by UN Programmes, where peoples Birdiversity Region is maintained. under Environmental Conservation programmes.

10. Discussion and Conclusion:

A large number of naturally occurring plant species flora of Medicinal importance are widely distributed over the Chhattisgarh region. The villagers are traditionally aware and well known about Medicinal properties and using these plants in the treatment of skin deases, body pain, cough etc. Plant organs like leaves, barks, roots, seeds are frequently utilized in preparation of Medicines. Urbanization and sprawl of city centres became the threatening of medicinal Varieties and endangered species. Some protective measures for conservation of medicinal plants of the state is essential. It may be carried out by making Policies and declaration of marked herbal zones/oxyzone Medicinal plant Development Areas under management plan.

**TABLE - I
 SPATIAL VARIATION OF NATURAL FORESTS IN C.G.**

S.No.	Forest Type	Area/Extent (Km2)	% Area	Cummulative %
1.	Reserve Forest	25,782	43.13	43.13
2.	Protected Forest	24,036	40.22	83.35
3.	Unclassified Forest	9,954	16.65	100.00
Total		59,772	100.00	100.00

**TABLE - II
 Physiographic Zones & Plant Species. (C.G.)**

S.No.	Physiographic Zones	Altitude Range (m AMSL)	Locality/Area	Major plant species
1.	Hills/Plateaus Erosional/Residual	Above 450 m AMSL	Deogarh, Mainpat Kotri, Pendra, Lormi, Dongargarh, Kanker, Abujhmar	Mixed Forests
2.	Hill slopes/Uplands Rock Pediments	300-450 m AMSL	Bilaspur, Sarguja, Korba, Dhamtari	Subtropical Decideous Forest
3.	Rolling plains, undulating plains Flood plains	150-300 m AMSL	Central Portion of C.G. Raipur, Durg, Rajnandgaon, Bemetara etc.	Herb, shrubs, Isolated Trees, Sparse Vegetation

TABLE – III
Soil category and Major Plant Species. (C.G.)

S.No.	Soil Types	Characteristics	Geomorphic Region/unit	Major plant Species.
1.	Laterite (Bhata)	Sand, Silt, Pisolitic Fe grains	Uplands Elevated Region	Graminae Sp. Eragrostis tenella, E. nigra, E. Thymifolia Einterupta microchlesa indica Targus, biflorus. Cassio- purvilla, wood fordia fruticosa
2.	Vertisol (Matasi) Alfisol (Dorsa)	Silty, clayey loam	Undulating plains	Rubaceae Family plants, Hemidesmus papelencea sp. Teramniss Labialis, Mitragyra paifolia, Fimbri's tyllis shcoerenoids, xero morphic uliginosa, Aleovera.
3.	Ultisol (Kanhar)	Clayey loam	Lowlying plains	Combeteraceae sp. Termalina betterica, T. alata, Anogeissus Latifolia Zizyph & saeplia, Euphorbia hitra, Gloriosa superba, phyllanthus emblica
4.	Alluvium (Kachhari)	Sandy silt loamy sand	Flood plains River/stream Bank	Euphorbeaceae, Rutacease Citrussp, meliaceae sp. Tamaraceae, Tamarix diocia, Eucalyptus comandulesis, Casuarina elliptica Ameissus Latifolia, Ziziphagus aeoplia, Tinospora cordifolia Terminalia arjuna, Withania somnifera

TABLE – IV
MAJOR MPS OF CHHATTISGARH (Based on UNDP)

S.No.	Category	Plant species variety
1.	Climbers	Aristolochia indica, Cenopegia bulbosa, Hemidesmus indicus, Mucuna pruriens, Piper longum, Tinospora cordifolia
2.	Herbs	Andographis paniculata, Eulophia herbacea, Ranvolfia Serpentina, Peucedamum nagpurense
3.	Shrubs	Acacia Sinuata, caesalpinia digyna, Embelia tsjerium - cottam, Gardenia gummifera, premna tomentosa
4.	Trees	Azardirachta indica, Madhuca longifolia, Terminalia arjuna, Boswellia serrata, pterocarpus- Marsupium, Emblica ofiicinalis, Anogeissus latifolia, Buchununia lanzan, Litsea glutinosa, Terminalia Chebula, Schleicheria oleosa etc.

(Source : www.cgvanoushedhi.gov.in)

TABLE – V
Medicinal Plant Useful For Human Body

S. No.	Name of MPS	Scientific Name of Sp. Botanical Scientific Nomenclature	Usefulness for human body Healing
1.	Brahmi	Centella asiatica	Brain Tonic
2.	Keoti bela	Ventiligo denticulata	Hair Tonic
3.	Nagermotha	Cyperus rotundus	Hypertension
4.	Lahsun	Allium Sotivum	Headache
5.	Bhringraj	Eclipa alba	Hair Tonic
6.	Sudarshan	Criman asiaticum	Ear disorders
7.	Amla	Phyllanthus emblica	Eye Tonic
8.	Sarso	Brassica Cumpestris	Cold
9.	Bhattcataiya	Solonum xanthocopum	Earache
10.	Mahua	Madhuka latifalia	Toothache
11.	Adusa	Adhatoda - zeylanica	Cough

12.	Harra	Termanalia Chechula	Dyspnoea
13.	Mahua	Madhuka latifoia	Skin disorder
14.	Tabbaco	Nicotiana tabacum	Body pains
15.	Arandi	Ricinus communis	Galactogogue
16.	Giloye	Tinospora cordifolia	Heart Tonic
17.	Baheda	Terminalia Belevica	Digestion
18.	Keukand	Costus speosus	Stomach
19.	Haldi	Curcuma longa	Respiratory Disorder
20.	Adrack	Zingiber officinale	Hyperacidity
21.	Saphed Musli	Chlorophytum boribillonum	Debility Tonic
22.	Banchaneli	Dioscored pentaphylla	Health Tonic
23.	Ghritkumari	Alove Barbadosis	Body skin healing

(C.G. State Medicine plants Board Raipur)

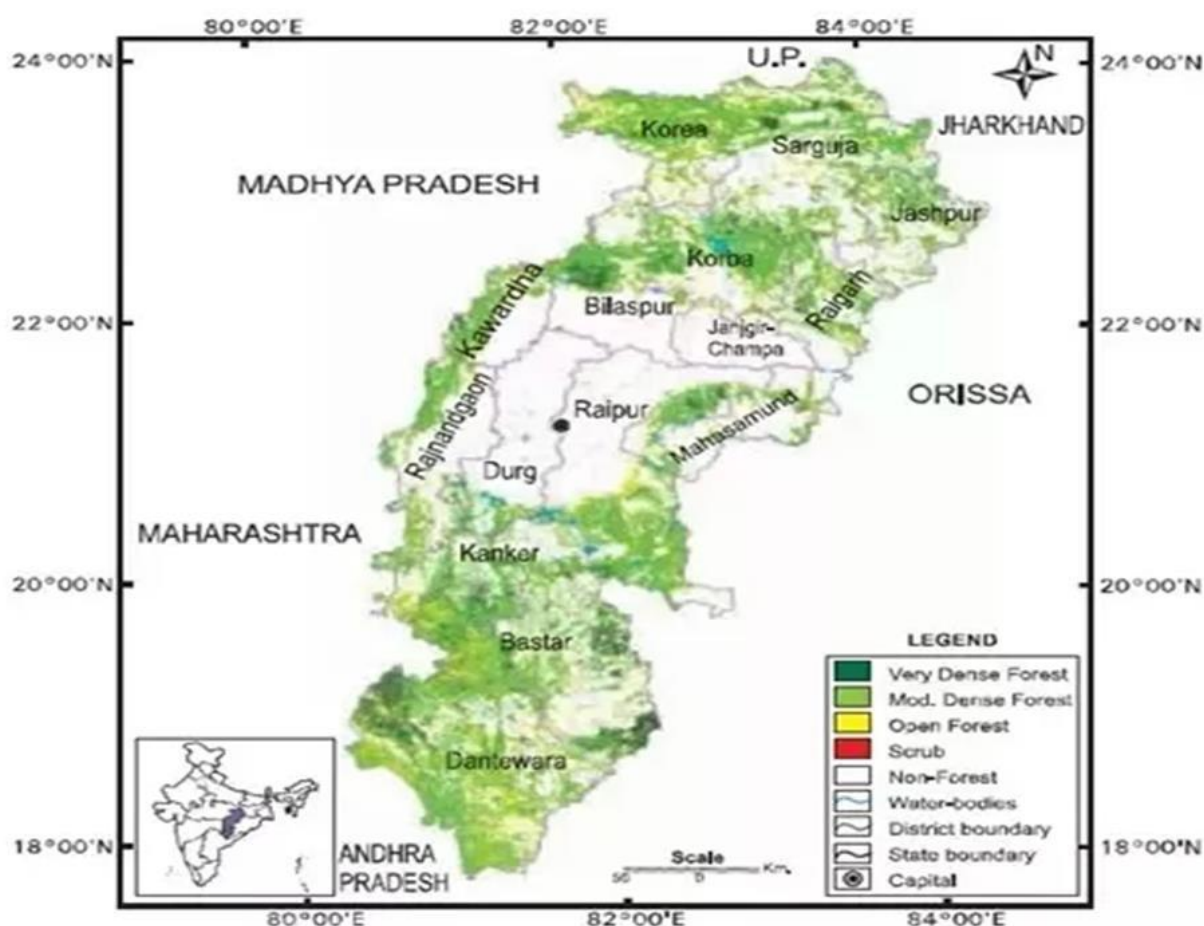


Figure I SPATIAL VARIATION OF FORESTS IN C.G. (Source : Google website)
 Forest cover map of Chhattisgarh

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