

STATUS AND FUTURE PROSPECTS OF MEDICINAL AND AROMATIC PLANTS (MAPs) IN CHHATTISGARH STATE OF INDIA: A REVIEW

*Dhawale, R. N., ¹Zhote, R. K., ²Bharose A. A., and ³Dethe A. M.

*Assistant Professor, Vilasrao Deshmukh College of Agricultural Biotechnology, Latur. (MS), PIN-413 512 India.

¹Assistant Professor, College of Agricultural Biotechnology, Georai Tanda, Aurangabad.

^{2,3}Associate Professor, Vilasrao Deshmukh College of Agricultural Biotechnology, Latur. (MS), PIN-413 512 India.

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*Corresponding Author

Dhawale, R. N

Assistant Professor, Vilasrao
Deshmukh College of
Agricultural Biotechnology,
Latur. (MS), PIN-413 512
India.

ABSTRACT

Therapeutic uses of Medicinal and Aromatic Plants (MAPs) were recorded as early as 7000 years ago and since then has continued to be part of our society. Chhattisgarh state as wide geographical and climate diversity provides a repository of valuable medicinal and aromatic plant wealth of the region. Chhattisgarh "The Herbal State" is endowed with vast resources having rich and diverse flora of medicinal and aromatic plants especially in Bastar Plateau and Northern Hills. The variable physiographic and climatic conditions of state support this ecological diversity. MAPs continue to play a significant role in the peoples welfare as they have been for several millennia. Collecting the herbal plants in the forest will cease due to over- exploitation, unless

the campaign to conserve biodiversity is successful. This valuable germplasm may be lost or may become extinct due to deforestation, shifting cultivation, over exploitation and scarcity of power and irrigation facilities of the area. The information and use of these medicinal and aromatic plants was passed from generation to generation as a '**guarded secret**'. Many of the plants contain important ingredients such as Alkoloids, Glycolysis, Phenols, Saponins, Tannins etc. In Chhattisgarh, some herbal plants become extinct and contributing to unsustainability. However, many of the plants still remain unevaluated for their medicinal and aromatic properties. If the efforts are made in this direction, it is possible that scientists may discover plants which may cure hazardous diseaseslike AIDS, Cancer and many heart

disorders. At present, cultivation of particular herbal plants viz., safed moosali, Kalmegh, Stevia, Muskdana etc. is characterized by subsistence cropping system, scattered farming areas, poor quality, back of integration and knowledge. Therefore commercial cultivation with advanced technology viz, biotechnology -R&D unit has certainly helpful for gaining public trust.

KEYWORDS: Herbal plants, Review, Chhattisgarh, MAPs, Herbal State.

A little whisper

From the times of the distant past, mankind has used plants; some were used to make preserving oils, others were used as a means of exchange or currency, as gold or silver. The Greeks included Laurel and Mint amongst their pantheon of gods. Hippocrates, the earliest doctor, Wrote reams about them. Even in these early days, there were already disagreements between herbalists and pharmacists. Later, Charlemagne recognized the impotence of plants by creating Gardens where people learnt how to grow herbal plants and the uses to which they could be put (Wilkinson, J. A., 2002).

During the entire Middle Ages and until the beginning of the Renaissance, herbal plants were much appreciated, though apices were supplanted by, which were used to mask the taste of unwholesome meat and make its digestion easier. They were also used in medicine or in magic, since at this time there was a considerable overlap between the two activities. In the 18th century an anathema was pronounced on all these "sorceress herbs" and even their use in cooking became rare. In the 19th century, they reappeared in England, in Queen Victoria's reign; it was done thing to have MAPs / herb garden.

Status of MAPs in Chhattisgarh State

World Scenario According to World Health Organization (WHO) more than 1 billion people rely on herbal medicines to some extent. The WHO has listed 21,000 plants that have reported medicinal uses around the world. India has a rich medicinal plant flora of some 2500 species. Those, 2000 to 2300 species are used in traditional medicines while at least 150 species are used commercially on a fairly large scale. Medicinal plants in India are estimated to be worth Rs. 550 crore. Medicinal and aromatic plants have a high market potential with the world demand of herbal products growing at the rate of 7 percent per annum (<<http://www.asktomnaturally>). Chhattisgarh is bestowed with a wealth of medicinal and aromatic plants, most of which have been traditionally used in Ayurveda, Yunani system of

medicines and tribal healers for generations. Chhattisgarh is rich in bio-diversity, Manyvaluable and rare medicinal and aromatic plants have been reported from this state. Bastar, the Southern plateau of Chhattisgarh, holds reputed position in world bio-diversity map for its unique bio-diversity. The forests of Chhattisgarh are rich in herbs useful in treatment of common ailments to lethal diseases like blood cancer. **Safed moosli (*Chlorophytum borivilianum L., Liliaceae*) holds an important position in Indian herbal medicine. The roots are widely used as a natural "sex tonic" and are an integral part of more than 100 herbal drug formulations (Oudhia, 2001a).** At present the availability of *Chlorophytum* is decreasing and obnoxious weeds like *Parthenium hysterophorus* and *Lantana* are taking its place (Oudhia 1996). In the forest of Bastar there are some medicinal plants like Sandhanparni (*Desmodium gangeticum*), which heal fresh wound within 24 hours. 52 contractual forming of Safed Moosli project sanctioned in different places of Chhattisgarh under the National Medicinal Plants Board on Contractual Farming Scheme (2003-04).

Bhramar for cancer, Satawar, Safe Moosli, Kali Moosli, Ashwagandha for promising tonic, Kukronda and Adusa for respiratory trouble, Gudmar and Sadasuhagan for Diabetes, Bramhi and Bach for memory, Kalmegh for chronic fever, Sarpagandha and Arjun for heart troubles are some examples of miracle herbs found in Chhattisgarh. Sanjivani booty, the miracle herb used for the treatment of "Lakshman", grows in abundant in this state (<http://www.cspinet.org/nah/4-99/functional-foods.htm>).

Due to different Agro climatic regions, the medicinal flora varies from different regions. About 300 rare and useful medicinal and aromatic plants have been reported from Chhattisgarh state of India. From last two decades due to heavy exploitation of natural medicinal plants, its availability is continuously decreasing. Sarpagandha Aloe and Gloriosa once in abundance, now they have become rare plants in these regions. In order to reduce the tremendous pressure on forests generated due to heavy demand of these herbs in national and international drug market, the conservation of medicinal and aromatic plants has become a need of the day (Sushil Kumar, *et al*, 1997).

Unprotecting in the best position

Open contact to herbal plants of Chhattisgarh in the wild is perhaps one of the main reasons for the current unsustainable levels of conservation. Other factors include lack of efficient data on wild plant populations, inadequate regulations for marketing, trading and legal

protection and poor contact to appropriate technology for sound conservation and harvesting and plantation development Government should support for supervision of herbal plants in the state. In some Non Governmental Organizations (NGOs) of Chhattisgarh exercise monopoly control over the purchasing and processing of such plants and other forest products, developing inefficiencies, and preventing fair pricing for collectors. Nevertheless, attempts are now under way to cultivate Sated Moosali and protect important natural habitats in order to reduce the pressure on these resources. Cultivation offers the best hope for conserving many herbal plants found in the wild. According to Alexander Mc Calla, director of the Agriculture and Natural Resources Department of the World Bank, What looks like a problem actually provides numerous opportunities for developing nations to advance rural well being. After all, herbal plants are one of the few developing country natural products that sell at premium prices. Thus, the Chhattisgarh clamor for more herbal ingredients creates possibilities for the local cultivation of wild stands. Such activities could help raise employment in the developing countries, enhance commerce around the world, and perhaps contribute to the health of millions.

If existing supplies of herbal plants are to keep up with demand, they will need adequate protection through development of appropriate institutions, policies, and legislation. Local communities need support and encouragement to protect these resources. To complement cultivation of adequate species, harvesting from the wild must be guided by accurate inventions and knowledge about the concerned species.

Characteristics of MAPs cultivation in Chhattisgarh

At present, cultivation of herbal plants is characterized by the following traits:

1. Subsistence cropping system

As cultivation herbal plants, for native people of state, most are grown by small holders in subsistence or mixed cropping system with low yield and quality.

2. Scattered farming areas

With few exceptions, most growing areas are widely scattered resulting in difficulty in collecting Harvested raw materials by the middlemen.

3. Poor quality

This is due to various factors including the use of unimproved cultivars, poor cultural techniques, and poor post harvest handling.

4. Lack of integration and knowledge

In most areas, herbal plants are not grown commercially or as inter crops. There is no systematic integration between primary crops and herbal plants.

a suitable need

1. Permit production of uniform material for commercial cultivation

Commercial cultivation of improved cultivars should produce uniform material resulting in consistent, standard herbal plants of high quality, a pre-requisite for successful pharmaceutical industries use.

2. Provide good income to farmers

MAPs plants are high valued crops and should bring higher income to the growers if improved high yielding clones or cultivars are used.

3. Provide opportunities for value adding through processing

Processing technology is available in Chhattisgarh state viz., Food Processing Center in Agricultural Universities. Commercial cultivation would provide raw material for local processing where cultivate taken place.

4. Provide continuity of supply

Cultivation is less risky for supply of raw material allowing manufacturers to set production targets well in advance.

5. Gaining public trust

Commercial cultivation has certainty helpful in gaining public trust in the state and this is the main suitable need for the public.

6. Provide verbal and writing documentation

This is required down to the level of plant origin, harvesting, processing, transplantation, introduction and implementation of a guideline for cultivated medicinal and aromatic plants and their corresponding drugs. This proposed guideline has some inbuilt safeguards to assure sustainable use and supply.

Objectives of collection**1. For use in traditional medicine**

For native tribal people in remote areas and those who can't afford to buy expensive drugs, traditional medication, e.g., Ayurvedic, Unanic, Jamu, are the only means to cure illness. Such systems depend almost exclusively on herbal plants with about 90% being collected from the forest.

2. For processing into pharmaceutical products

Due to the scarcity of transportation, and cost the variability and irregular supply of collected material very few tribal people are able to maintain the practice.

A strategy for the future

1. Agricultural support agencies should strengthen extension efforts to farmers.
2. Research institutions need to improve basic knowledge about cultivation practices, and dissemination of plant species.
3. Conservation agencies and NGOs should promote conservation of vulnerable species at the grass- root level.
4. Community organizations need to adopt sustainable collection and management practices on public lands.
5. Profitable private enterprises for processing, transporting, and marketing must be developed.
6. Government institutions need to be strengthened to regulate these important resources and at the same time, foster their sustainable development and conservation.

An opportunity

Natural products are important in many aspects of life, imparting taste, aroma, and color to most of our foods and providing a vast number of pharmaceutical chemicals used in medicine and agriculture. Many aromatic plants are not cultivated and existing demands force the gathering of wild popularities. Several new herbal crops should be developed by breeding and biotechnology Departments of the state e.g., Celery, Thyme, Micromeria, Lemongrass, Achillea etc. The high quality herbal plants are important to the food industry by supplying a stable quality and quantity to the growing herbal industry.

In the coming years, Biotechnology R&D should produce a large number of new genetically improved herbal plant varieties in Chhattisgarh or India, including *Vitex negunda*, *Vitex agnus castus*, *Vanilla plantifolia*, *Withania somnifera*, *Casia angustifolia* Vahl, *lepidium*.

sativim, *Andrographis peniculta*, *Abelmoschus Moschntus*, *Jatropha curcas*, *Ocimum Basillium*, *Chlorophytum Borivilinum*, *Rauwalfia serpentina*, *Mukuna Purita*, *Embelia Ribs Burn*, *Coleus* etc will lead to major commercial activities. Micropropagation technology will provide high-quality planting materials to farmers and industries. The Chhattisgarh state should be in a position to fully utilize, on a sustainable basis, medicinal and aromatic plants genetically engineered MAPs would make the health care system more efficient and cheaper. DNA fingerprinting techniques and molecular biology diagnostic kits should be used to solve the genetic disorders in the MAPs population. The establishment of *ex situ* gene banks to conserve valuable germplasm and diversity, and a large number of repositories centers for herbal plants should be possible in "the herbal state". It is expected that MAPs plants of Chhattisgarh would be able to produce large numbers of cosmetic, pharmaceutical and therapeutic value, and many other important items. ***The recent discovery of the gene for recalcitrant species was a landmark event.*** Certainly in the coming years could with needs a major increase in new herbal varieties generated through biotechnological tools. To achieve the goal of self-reliance in this field, Chhattisgarh will require a strong biotechnology scientists and laboratory, already Chhattisgarh has a biotechnology education infrastructure comprising one Agricultural Biotechnology Department of I. G. A. University, Under-Graduate college of Agricultural Biotechnology, Sh. Narayan P. Awasthi Govt., College and Department of Biotechnology in traditional universities. It should therefore be possible to develop capabilities and programme, So that these institutions act as regional hubs for the same.

Need of training on different aspects of medicinal and aromatic plants

Chhattisgarh is having rich in biodiversity and hidden potential of medicinal and aromatic herbs. We have not been able to utilize opportunities and exploit use of medicinal and aromatic herbs due to traditions. Potential herbs are scientifically unknown to the world and of those known many are over discharged leading to their death or listing them as endangered or threatened plants. Due to continuous efforts of many environmental agencies, now government is also planning to impose a ban on collection of medicinal and aromatic herbs from its natural habitat. Although a plant collected from the wild lay fetch three times as

much as a cultivated variety, but because of strict legal regulations, now farmers are trying to cultivate the medicinal plants. Today more than 500 farmers are cultivating about 30 species of medicinal and aromatic herbs in fairly large areas. Many species like Safed Moosli, are having largest acreage of the world, It is a plus point for the farmers of Chhattisgarh that the produce resulted from the cultivation of medicinal plants in crop fields are not much different to produce collected from the forests. This is due to the favorable situation and environment of the Chhattisgarh region. Many studies conducted on medicinal and aromatic herbs of Chhattisgarh have revealed that the differences in alkaloid content of major medicinal plants are negligible when the contents of cultivated and natural products are compared. The climatic and edaphic conditions of Chhattisgarh are suitable for commercial cultivation of more than 50 potential plants including Safed Moosli, Satawar, Ashwagandh, Akarkara, Sarpagandha, Bach, Ratanjot, Aloe, Senna, Gymnema. Mucuna etc. ([http://www:asktomnaturally.](http://www.asktomnaturally.)).

Chhattisgarh is known as Rice bowl of India. Rice is one of the traditional crops of this state. Many of the traditional varieties are reported to have medicinal properties. Collection surveys made during the seventies by Dr. Richaria and in the late nineties by Das and Oudhia (2001) have led to the identification of more than 50 medicinal rice varieties. It is reported that the variety "Aalcha" is used for treatment of pimples while "Baissor" is used for chronic headache and epilepsy and "Gathunan", "Karhani" and "Kalimooch" respectively for treatment of rheumatism, paralysis, and skin diseases. (Siddiq, 2004). But low production and poor market have made his crop high-risk crop. Seeing the scope, demand and ease in cultivation, now more and more Chhattisgarh farmers are taking interest in commercial cultivation of medicinal and aromatic herbs, but due to lack of proper technical guidance, they are in dilemma. Lack of proper technical guidance in cultivation and poor information on processing and marketing, are discouraging the herb growers of the state as well as the young enthusiastic new farmers. There is a strong need to educate the farmers, young entrepreneurs, local herb exporters, bank persons etc. about the different aspects of medicinal and aromatic herbs from identification to marketing in national and international drug markets. To root out this problem and to fulfill this need the concept of different and advanced diploma courses in herbs should be proposed by the different institutions.

CONCLUSIONS

MAPs are man's best friends in time of need. As technology and development advance, the need for them is much greater and the chance to collect them from the forest is recording.

MAPs continue to play a significant role in the people's welfare as they have been for several millennia. Due to higher demand of raw natural habitats of most herbal plants, large-scale cultivation of promising species should be attempted in several areas. Collecting in the wild will cease due to over-exploitation, unless the campaign to conserve biodiversity is successful. Herbal plants have not been subjected to intensive breeding and biotechnological programmes, so yield and quality are very low. To start any breeding programme, germplasm collection, and conservation are most essential. They should be supplemented with biotechnology R&D unit to obtain optimum yield and quality of the source raw materials for different products, so that Chhattisgarh will really emerge as "The Herbal State"

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