

Rare and Endangered Medicinal Plants of Chitrakoot Area of Satna District (M.P) Used in Ayurvedic Formulations and Their Conservation

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ABSTRACT

The present study was conducted in Chitrakoot area of Satna district (M.P.) due to great reservoir of ethnomedicinally useful plants. There is a need to explore and record the medicinal plants used in the treatment of diseases. A survey was also conducted, at different herbal drug stores in Chitrakoot to list plants used in various Ayurvedic formulations being sold. A total of 8 rare and endangered plant species such as *Abrus precatorius* L., *Andrographis paniculata* (Burm. F.) Wall. ex Nees, *Asparagus racemosus* Wild., *Butea monosperma* (Lamk.) Taub., *Gloriosa superba* L., *Mucuna pruriens* (L.) DC., *Oroxylum indicum* (L.) Venten and *Terminalia chebula* Retz. used in Ayurvedic formulation. The conservation of medicinal plant wealth requires serious consideration. Over exploitation of medicinal plants wealth should be checked. There is a need to encourage the cultivation of medicinal plants at large scale and development of the herbal gardens.

Keywords: Rare and Endangered plants, Ayurvedic Formulations, Conservation

INTRODUCTION

Human societies have been in close contact with their environments since the beginning of their formation and used the ingredients of the environment to obtain food and medicine. Herbal medicines are in great demand in both developed and developing countries in primary health care because of their great efficacy and minimal or no side effects (Narula *et al.*, 2000). Ayurveda natural system of medicine originated in India more than 3000 years ago. Ayurveda is heavily practiced in India and Nepal, where around 80% of the population report using it (Dargan *et al.* 2008; Alam, 2008). Need for medico-ethnobotanical surveys have been emphasized by Raghunathan (1987) for their role in Ayurveda. A few noteworthy contributions in this regard are those by Khan and Ahmad (1994); Dwivedi *et al.* (2006); Rakhi and Vashistha (2011). India is one of the richest floristic diversity zones having 16 agroclimatic centres of the world with about 45000 plant species, of which about 15000 are of medicinal importance. The various Indian systems of medicine have identified 2000 plants, of which 600 species are mostly used in preparation of drug (Nautiyal, *et al.*, 2002). Traditionally, medicinal plants are obtained from the wild sources. Out of which 40 per cent are available in forest areas, 50 per cent in non forest areas and around 10 per cent in cultivated lands (Suneetha and Chandrakanth, 2002).

With the increasing demand for herbal drugs, natural health products and secondary metabolites of medicinal

plants, the use of medicinal plants is growing rapidly throughout the world (Nalawade, *et al.*, 2003). This increasing demand leads to irrational cutting of plants leading to their depletion in the wild. Moreover, the natural and man made calamities lead to further depletion of medicinal plants diversity. The flora of the world is being destroyed at an alarming rate. According to the International Union for Conservation of Nature and the World Wildlife Fund there are between 50000 and 80000 flowering plant species used for medicinal purposes worldwide. Among these about 15000 species are threatened with extinction from overharvesting and habitat destruction (Bentley, 2010)

Keeping above objectives in mind, it is of utmost importance to assess the actual herbal wealth of country by undertaking surveys and documentation of data. Chitrakoot is a great reservoir of ethnomedicinally useful plants, therefore a survey of Chitrakoot area of Satna district (M.P.) was carried out. In order to serve the health needs, various conservation measures must be undertaken. Conservation is a careful preservation and protection of natural resources or habitats of medicinal plants especially through planned management.

MATERIALS AND METHODS:

The Chitrakoot area is situated in the northern region of Satna district of M.P. It extends from 80° 52' to 80° 73' N latitude and 25° 10' to 25° 52' E longitude and cover an area of 1,584 square Km. The forest of the

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Chitrakoot predominantly consists of tropical dry mixed deciduous type. The climate is dry and the maximum temperature goes up to 50.5°C in the month of May and minimum up to 5°C in the month of January. The Chitrakoot area of Satna is surrounded on north, north west and north east by Chitrakoot district of Uttar Pradesh and west by Panna district of Madhya Pradesh. The present study is based on more than two years of work during which knowledge about plants and their efficacious properties in curing various diseases were gathered. During the course of collection, plenty of information about the local name(s) and the method of application of medicinally useful plants were noted down. The collected plants were identified with the help of local Floras (Duthie, 1903-1929; Mudgal *et al.*, 1997; Singh *et al.*, 2001; Verma *et al.*, 1993) as far as possible. The doubtful specimens were further verified and their identity confirmed at NBRI, Lucknow; Central Circle of BSI at Allahabad. Properly mounted specimens are deposited at the Herbarium Department of Botany, Shibli National College, Azamgarh. A survey was also undertaken of different drug stores selling herbal products in Chitrakoot and comprehensive list of the herbal component of various ayurvedic drugs was prepared.

Observation:

1. *Abrus precatorius* L. (Fabaceae)

Local name: Ghughachi, Ratti.

Locality: Sati Anusuiya, Surangi, Khokhala (Ramnagar)

Slender climbing shrubs. Leaflets 10-20 pairs, linear, glabrous. Flowers pinkish white. Pods 4 cm long, seeds subglobose, shining, usually scarlet with a black eye, sometimes white. Commonly found in the forest tracks.

Flowering and Fruiting: August-June

Parts use: Roots, leaves and seeds.

Medicinal Uses: Powdered seeds are used as a snuff for headache, and abortion. Boiled seeds are aphrodisiac. Seed paste is applied externally for stiff shoulder, sciatica, paralysis and abortion. Root decoction with honey is administered orally for gonorrhoea. The paste of leaves is used in ringworm disease. A decoction of the flower is used as an anthelmintic. The leaves of *A. precatorius* along with the young leaves of *Psidium guajava* and powdered seed of black pepper (*Piper nigrum*) is effective in the treatment of cold, cough, intermittent fever and headache.

Used in Ayurvedic Formulation: Tranquil

2. *Andrographis paniculata* (Burm. F.) Wall. ex Nees (Acanthaceae)

Local Name: Kalmegh.

Locality: Koldari, Kailashpur.

Erect, branched, glabrous annual herb, 30-100 cm tall. Leaves ovate, lanceolate, acute at both ends. Inflorescence axillary and terminal, unilateral raceme, forming a panicle. Panicle branches zig-zag. Flowers white, spotted with rose purple. Capsule oblong, compressed, minutely hairy, acute. Commonly found scattered throughout the forest area.

Flowerer and fruiting : October – March.

Parts use: Whole plant.

Medicinal Uses : The tribals of this region use the decoction of whole plant in malarial fever. Recent experiments have shown that the plant has antibiotic and anti-typhoid activity. The whole plant is dried and burnt in a closed clay container and the ash is used with honey in the treatment of cough. A poultice made from the tender stem and leaves along with leaves of *Azadiracta indica* and *Aristolochia indica* is applied on eczema and ringworm diseases. It is also considered useful in the treatment of cholera, dysentery, diarrhoea and acute bacillary dysentery. Decoction of whole plant is given to diabetic patient in morning and evening till cure. ¼ cup decoction of leaves is given early in the morning in gastric disorders.

Used in Ayurvedic formulation : Livomyn, Pigmento, Hepatogard, Purim

3. *Asparagus racemosus* Wild. (Liliaceae)

Local Name: Satawar

Locality: Dewlaha, Mohkamgarha, Barha Mawan

A slender bushy climber with woody prickly branches. Cladodes acicular, triquetrous. Flowers white, scented. Berries globose, scarlet. Commonly found in Sal and mixed forests.

Flowering and Fruiting: September-January

Parts use: Roots

Medicinal Uses: The tuberous roots increase lactation. The roots are considered aphrodisiac when taken with honey and cow milk. The juice of the root is also dropped in the mouth or nose to stop bleeding. The tribals of this region use the roots in case of rheumatic complaints. They also use the root powder along with water in the treatment of dysentery, diarrhoea and as a tonic in general debility. Roots are crushed with water, filtered and mixed with jaggery and given to patient in the treatment of scanty urine.

Used in Ayurvedic Formulation: Femiplex, Neo, M₂-Tone, Ojus, Himaplasia, Tentex Geriforte, Lukol, Renalka

4. *Butea monosperma* (Lamk.) Taub. (Fabaceae)

Local Name: Chheul, Chheula, Palas, Tesu.

Locality: Padwaniya Kothar.

A small deciduous tree. Leaves trifoliate, leaflets ovate-rhomboid. Flowers bright orange-red. Pods obliquely rounded at the base. Commonly found in wastelands and forests areas.

Flowering and Fruiting: March-June.

Parts use: Stem bark, gum and leaves.

Medicinal Uses: Fresh stem bark gum is taken to cure diarrhoea, 2gm gum, once in a day for 5 days. Stem bark pounded and filtered juice is given to treat dysentery, 1- cup juice, twice in a day for 3 days. Young leaves crushed and juice is dropped in the ear to treat earache, 2-3 drops, twice in a day for 3 days. Dilute gum is applied to cure cracks on foot sole, before going to bed, for 15 days. Bark decoction is used to cure piles, 1-cup decoction, early in the morning for two months. Fresh leaves are warmed with mustard oil and bandaged on rheumatic pain, twice in a day for 5 days. Young leaves are chewed to treat scorpion sting, 4-5

leaves, once in a day for 3 days. Bark decoction is used in snakebite, 1-cup decoction, twice in a day for 5 days. Root juice is given in snakebite, 1-cup juice, once in a day for 5 days.

Used in Ayurvedic Formulation: Krimighna churn, Krimimudgar ras, Krmiku-tharras, Plashbeejj churn. Plash ghrut, Crush Lukol.

5. *Gloriosa superba* L. (Liliaceae).

Local Name: Kalihari.

Locality: Bada Padaha, Khokhala (Ramnagar).

A very graceful climber. Leaves lanceolate with a spiral tip. Flowers very attractive, lower half yellow, upper half red, finally the whole becoming red. Found sporadic, in open forests.

Flowering and Fruiting: August-November.

Parts use: Roots, leaves and flowers.

Medicinal Uses: The flowers are regarded as cardiac tonic; paste of flower mixed with honey is administered twice a day for about one month. The root stock is used in the treatment of promoting labour pain for easy delivery. The leaves are dried in the shade and powdered. The leaf powder is administered along with

cow milk for curing bleeding piles. The decoction of entire plant except the root stalk is effectively used for abortion.

Used in Ayurvedic Formulation: Mohavishgarbh tel, Nirundi tel, Rumalaya cream, Langali rasayan

6. *Mucuna pruriens* (L.) DC. (Fabaceae)

Local Name: Kewanch, Kaunch

Locality: Sati Anusuiya, Barha Mawan

An extensive climber, young branches pubescent. Leaflets 3, obovate, rhomboid or ovate. Flowers deep purple. Pods clothed with brown stinging hairs. Commonly found on small trees and bushes, along roadsides, and in mixed forests.

Flowering and Fruiting: October-May

Parts use: Roots and seeds

Medicinal Uses: Seeds powder with cow's milk and sugar is given for increasing sexual vigour, 2-teaspoon powder with 1 glass of lukewarm milk and 1-teaspoon sugar, once for 3 days. Root is pounded and paste is applied on bitten part of the body, twice in a day for 3 days. 10gm seed powder with one glass of milk is used for strength, once early in the morning for one month.



Figure 1: *Andrographis paniculata*



Figure 2: *Gloriosa superba*

Figure 3: *Mucuna pruriens*Figure 4: *Oroxylum indicum*

Used in Ayurvedic Formulation: Kawanch pak, Kawanch churn, Kamdev ghrít, Ashwagandha churn, Musli pak, Dhatupaustic churn, Agstya haritaka, Badam pak, Strenex, Tentax forte, Speman tab.

7. *Oroxylum indicum* (L.) Venten. (Bignoniaceae)

Local Name: Sonapatha

Locality: Malgausa

A deciduous tree. Leaves usually tufted towards twig end, leaflets ovate-elliptic. Flowers deep maroon. Fruit flat, tapering at both ends. Commonly found in mixed forests.

Flowering and Fruiting: June-March.

Parts use: Stem bark and leaves.

Medicinal Uses: The stem bark is said to be useful in measles. The decoction of leaves mixed with honey is beneficial in cases of malaria fever.

Used in Ayurvedic Formulation: Dashmoolarishta, Dasamool Kwath, Pushyanug Churn, Amritarista, Mahanarayan tel, Chayavanpras etc.

8. *Terminalia chebula* Retz. (Combretaceae).

Local Name: Harra.

Locality: Padwaniya Kothar

A large deciduous tree. Leaves elliptic-ovate. Flowers cream-coloured, scented. Fruits obovoid-ellipsoid, 5-ribbed when dry. Occasionally found in the forests.

Flowering and Fruiting: May-April.

Parts use: Fruits

Medicinal Uses: Fruits powder of *Terminalia chebula* and *Phyllanthus emblica* is prepared and used for cure of acidity, 1-2gm powder given with water twice a day for 15 days. Fruits powder with water is used to cure liver disorders, 2-teaspoon powder with 1 glass of water, once early in the morning for 15 days. A decoction of *Terminalia chebula* (bark), *Tinospora cordifolia* (bark) and *Azadirachta indica* (bark) are prepared in a clay pot and used for cure of malarial fever, 1-cup of decoction, twice in a day for one week. Fruits powder with honey is used as purgative, 1-teaspoon powder with 3-teaspoon of honey, once early in the morning for one week.

Used in Ayurvedic Formulation: Haritaki churn, Triphala churn, Agastgy haritaki aveleha, Abhyarista, Triphala ghrti, Chitrak, Haritaki, M₂ tone, Hepatogard, Ojus, Mentat, Liv-52, Herbolax Pilex, Menosan, Gerforte, Abana.

RESULTS AND DISCUSSION :

During the course of this study ethnomedicinal data were recorded from local people especially the tribal's and medicine men, dispersed throughout the area. A number of field trips spanning over two and half years were undertaken to collect plants which were considered effective in curing various diseases. Although use of numerous plant parts such as root, stem, stem bark, leaves, fruits, seeds etc. is very common but the method of application varies among different tribes. The medicinal plants have been alphabetically arranged with their correct botanical name, family, local name(s), and habit, mode of administration and dose and use in ayurvedic formulation. The authentic identification of the botanical source and on the spot verification is of prime importance. Usually this aspect is not given due attention by the workers. A total of 8 rare and endangered plant species used in ayurvedic formulations have been recorded. The authors stress upon the urgent conservation and protection of medicinal plants wealth. Over exploitation of medicinal plants wealth should be checked. According to Tandon(2006) *in-situ* conservation of medicinal plants is highly desired along with their habitats. There is a need to encourage the cultivation of medicinal plants at large scale and development of the herbal gardens.

The conservation of medicinal plants and their genetic resources has long been realised as an integral part of biodiversity conservation. There are two methods for the conservation of plant genetic resources, namely *In-situ* and *Ex-situ* conservation. *In-situ* method of conservation deals with the "on-site conservation" of the wild genetic diversity in natural habitat. In India, the conservation of forest areas preserves through Protected Areas like National Parks, Wildlife Sanctuaries and Biosphere Reserves. Species that are heavily depleted by over-collection should be re-introduced into areas where they originally grew in wild. National Parks are protected areas of important wild resources created to preserve and restore biodiversity (Chiarucci *et al.* 2001). Wild nurseries can provide an effective approach for *In-situ* conservation of medicinal plants that are endemic, threatened, and in-demand (Soule *et al.*, 2005). There are 18 biosphere reserves in India. These aim at securing the ecosystem by stopping irresponsible interference of humans with the ecosystem and also to conserve the endemic and endangered species.

Ex-situ conservation involves conservation outside the native habitat and is generally used to safeguard population from destruction, replacement or deterioration. *Ex-situ* conservation includes methods like seed storage, DNA storage, pollen storage, field gene banks and botanical gardens etc. (Sarma, 2003).

For many species of medicinal plants their wild population is on life-threatening level and it is not suitable for dealing *in-situ* conservation action. It can be served as field gene banks and also help to engaging the number of stakeholders in production and regeneration of medicinal plants. Seed banks proposed a better way of storing the genetic diversity of many medicinal plants. Botanic gardens should setup alternative means of *Ex-situ* conservation for those species which can not be stored in seed banks. Hence, the conservation of medicinal plant wealth requires serious consideration. Of late there has been some realization in this respect. Such steps will be helpful in conserving our vast medicinal plant resources.

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