ANNALS OF PHARMACY AND PHARMACEUTICAL SCIENCES
Volume 3 | Issue 2 | October, 2012 | 62-66
RESEARCH ARTICLE

Medicinal and aromatic herbs diversity in croplands and cultivable wastelands of Malwa Plateau, Madhya Pradesh

GYANENDRA TIWARI, O.P. SINGH AND RAJESH TIWARI

ABSTRACT

An extensive survey of indigenous medicinal herbs occurring associated with crops and in cultivable wastelands in adjoining areas of Mandsaur district was undertaken. In the present study, seventy-five species belonging to thirty families were dominantly found which have the medicinal value and are being used to cure various diseases by local people. These medicinal and aromatic plants are used in pharmaceutical industries. The survey has revealed that herbs like *Trianthema monogyna, Boerhaavia diffusa, Ocimum basillicum, Cyperus rotundus, Solanum nigrum, Sida* sp., *Pedalium murex, Tribulus terrestris, Vernonia* spp., *Psoralea coryllifolia, Cleome viscosa, Datura stramonium, Vitex negundo, Eclipta alba, Achyranthus aspera, Chenopodium album, Argemone maxicana, Evolvulus alsinoides, Tridex procumbens* and *Withania somnifera* were found dominantly. These are of more importance in pharmaceutical preparations. The maximum number of medicinal and aromatic herbs was represented by family Asteraceae and Lamiaceae, respectively. The plants collected during survey were identified, taxonomically classified as per morphological characters specific to species. Medicinal use of plant species by local people and from available textbooks has also been provided so that possibility of their cultivation may be explored for sustained supply of the authentic raw drug material requirements of industries.

Key words : Medicinal and aromatic herbs, Diversity, Croplands, Cultivable waste lands.

How to cite this paper : Tiwari, Gyanendra, Singh, O.P. and Tiwari, Rajesh (2012). Medicinal and aromatic herbs diversity in croplands and cultivable wastelands of Malwa Plateau, Madhya Pradesh, *Ann. Pharm. & Pharm. Sci.*, **3** (2) : 62-66.

Article chronicle : Received : *25.09.2012;* **Revised :** *12.10.2012;* **Accepted :** *18.10.2012*

INTRODUCTION

The collection of medicinal herbs dates back to antiquity. The earliest mention of medicinal plants is found in the *Riguveda* having been written between 4500 and 1600 BC where the properties of various medicinal herbs has been given in detail. In Atherveda, there is mention of *kirata* girls who used to dug out drug yielding plants in the mountains. *Sushruta samhita* (800-1000 BC) contains a detailed account of medicinal drugs. Charak (800-1000BC) in his *Charak samhita*, gave a remarkable description of medicinal plants.

Diversified ecosystem availability in India due to its unique location, climate, soil and topography make it a treasurer house of biodiversity in terms of flora and fauna. India has huge potential of medicinal plants diversity, which are degraded at a very much faster rate since two decades due to increasing demand of herbal medicines throughout the world. Result of merciless exploitation of medicinal and aromatic herbs from their natural habitats led these herbs at the verge of rare, endangered and even to the extent of extinction. These medicinal herbs are found in dense forests, forest wastelands, croplands, non-forest wastelands, grazing lands, which should be conserved judiciously *in-situ* and *ex-situ* ways.

Malwa plateau is an agro-climate zone of Madhya Pradesh covering Indore, Dewas, Ujjain, Dhar, Ratlam, Neemuch, Mandsaur and parts of Jhabua districts. This zone has a variety of semi-arid natural habitats with flat topography, medium rainfall (75-100 cm), vertisol type soil with medium fertility and other specific agro-climatic peculiarities. Pace of degradation of herbal diversity particularly of medicinal and aromatic plants was accelerated at an alarming rate since two decades due to

MEMBERS OF THE RESEARCH FORUM

Address for correspondence :
GAJENDRA SINGH, College of Horticulture, MANDSAUR (M.P.) INDIA

Coopted auhors :
O.P. SINGH AND RAJESH TIWARI, College of Horticulture, MANDSAUR (M.P.) INDIA

many reasons. Some of them are:

– Uncontrolled grazing pressure beyond carrying capacity due to shrinking grazing land recourses and with special reference to migrating camels / goats / sheeps from Rajasthan state.

– Less attention on fodder cultivation increases grazing pressure

– Shrinking forest recourses and forest density destroying natural habitats harbouring phyto-diversity in the ground cover beneath tree canopy.

– Uncontrolled digging / collection of minor forest produce particularly medicinal raw material by traders.

Therefore, there is a great need of survey of medicinal and aromatic herbs of Malwa region with respect to their botanical identification, taxonomic classification, natural habitats availability status and medicinal uses. This will help in framing conservation and maintenance strategies and exploring possibility of cultivation of these plants for sustainable supply of raw drugs for domestic and export purposes.

MATERIALS AND METHODS

The survey of medicinal herbs involved frequent field trips to various locations of Mandsaur, Neemuch and Ratlam Districts during years 2005-2010 during both rainy and winter seasons. Surveys included forests around and catchments area of Gandhisagar Dam, forests of Rampura, Takshkeshwar, non –forest wastelands (NFW), and croplands of all three districts of study. The species diversity arranged according to family, their natural habitat, availability status in their natural habitat [Abundant (A), Rare(R), Threatened (Tr), Endangered (End), Extinct (Ex)] and medicinal use potential as per available texts.

RESULTS AND DISCUSSION

Survey results revealed many herbaceous medicinal and aromatic plants occurring naturally in their respective natural habitat/niche area under the region. Out of these, the seventy-five herbs belonged to thirty families were dominantly reported according to their habitat, availability status and medicinal use (Table 1). Such a huge medicinal herbs diversity will open new dimensions in diversifying existing cropping systems in region. Further, studies are needed to explore the potential of these medicinal herbs for cultivation and inclusion in existing cropping systems and in future agro forestry models for

Table 1: Medicinal and aromatic herbs diversity in croplands / non forest wastelands of Malwa plateau, Madhya Pradesh

Sr. No.	Family/Plant species	Natural habitat	Availability status	Medicinal use
1.	**Papilionaceae:**			
	Abrus precatorius (Ratti)	F/NFW	R	Abortion,Cough
	Tephrosia purpurea (Sarphonka)	NFW	R	Diarrhoea, dyspepsia, Asthma, rheumatism, urinary disorders, piles, lever problems
	Clitoria ternatea (Aparjita)	F/NFW	R	Fevers, Chronic bronchitis, Irritation of bladder and urethera
	Psoralea corylifolia	C	A	Leucoderma,leprosy and other skin diseases
2.	**Malvaceae**			
	Abutilon indicum (kangi)	F / NFW	R	Haematuria, Asthma, Leprosy, Piles
	Sida acuta (Bala)	NFW / C	A	Nervous and urinary disorders, Aphrodisiac, Worns
	Sida cordifolia (Mahabala)	NFW / C	R	Dysentry, urinary troubles, cystitis, Haematuria, sciatica
	Sida rhombifolia	NFW / C	R	Rheumatism, Tuberculosis, skin troubles, fevers
3.	**Euphorbiaceae:**			
	Phyllanthus fraternus	C	A	Hypatoprotective, diseases urinogenital tract, dysentery, diarrhoea, jaundice, dyspepsia
	Phyllanthus amarus	C	A	----------do----------
	Phyllanthus urineria	C	R	----------do----------
	Euphorbia hirta (Dudhi)	C/NFW	A	Cough, asthma, colic, dysentery, urinogenital diseases
	Acalipha indica (Kuppi)	C	R	Bronchitis, asthma,
4.	**Amaranthaceae**			
	Achyranthus aspera	C/NFW	A	Dropsy, piles, skin eruptions
	Amaranthus spinosa	C/NFW	R	Biliousness, laprosy, bronchitis, piles, leucorrhoea
	Celosia argentea	C	R	Diarrhoea, dysentery, eye diseases
5.	**Primulaceae**			
	Anagalis arvensis	C	R	Opthalmia, dropsy
6.	**Acanthaceae**			
	Andrographis *paniculata*	NFW	E	Fever, jaundice, malaria

Table 1 Contd…

Contd… Table 1.

7.	**Papervaraceae**			
	Argemone maxicana	C/NFW	R	Leprosy, skin diseases, asthma
	Papaver somniferum	C	-	Cough, anesthesia
8.	**Asteraceae**			
	Blumia lacera	C	R	Anthelmantic, astringent, febrifuge
	Eclipta alba	C	A	Tonic, jaundice, spleen enlargement, hair growth
	Tridex procumbens	C	R	Bronchial catarrh, dysentery, diarrhoea, bleeding wounds
	Xanthium strumatium	NFW/C	A	Maleria, leucorrhoea, urinogenital diseases, cancer, herpes
	Echinops echinatus	NFW/C	R	Dyspepsia, syphilis, impotency, hysteria
	Cichorium intybus	C	R	Stomach diseases
	Vernonia cinerea	C	R	Used in malaria with quinine, eczema.
9.	**Nyctaginaceae**			
	Boerhaavia diffusa	NFW	Tr	Asthma, anti-inflamatory, kidney diseases, anemia, jaundice
10.	**Caesalpiniaceae**			
	Cassia tora	NFW/C	A	Skin diseases
	Cassia angustifolia	NFW	R	Skin diseases
	Caesalpinia crista	NFW	E	All kinds of fevers particularly malaria
11.	**Chenopodiaceae**			
	Chinopodium album	C	A	Hepatic disorders, spleen enlargement
	Chinopodium murale	C	A	----------do----------
12.	**Apiaceae**			
	Centela asiatica	C	End	Memory enhancement, leprosy, Syphilis
13.	**Cucurbitaceae**			
	Citrullus colocynthis	NFW	Tr	Jaundice, rheumatism, urinary troubles
	Momordica charantia	NFW	End	Diabetes, hepato-protetive
	Momordica dioca	NFW	End	----------do----------
	Bryonia spp.	NFW	R	Throat infection, bronchitis
14.	**Capparidaceae**			
	Cleome viscosa	C/NFW	R	Fever, Diarrhoea, round worms, In discharges from the ear
15.	**Solanaceae**			
	Datura metel	C/NFW	End	Dandruff, earache, asthma
	Datura stromonium	C/NFW	R	----------do----------
	Withania somnifera	C/NFW	R	General tonic, kidney diseases, rheumatism
	Solanum xanthocarpum	NFW	R	Cough, asthma, rheumatism, gonorrhoea
	Solanum nigrum	NFW/C	R	Cirrhosis of lever, cardiac problem, hydrophobia, piles
	Physalis minima	NFW/C	R	Worms, bowl complaints
16	**Lamiaceae**			
	Leucus aspera	C	R	Skin eruptions, cough, cold, rheumatism
	Ocimum sanctum	C	R	Cough, cold, rheumatism, fevers
	Ocimum basilicum	C	R	Anti-viral, mosquito repellant
17.	**Oxalidaceae**			
	Oxalis corniculata	C	R	Dyspepsia, anemia, piles, tymapnitis, scurvy
18.	**Pedaliaceae**			
	Pedalium murex	NFW	End	Urinogenital diseases, gonorrhoea, dysuria
19.	**Portulacaceae**			
	Portulaca oleracia	C	R	Cordio-vascular diseases, haematuria
20.	**Polygonaceae**			
	Rumex dentatus	C	R	Cutaneous disorders, burns
21.	**Aizoaceae**			
	Trianthema *monogyna*	C	A	Asthma, amenorrhoea, dropsy, rheumatism

Table 1 Contd….

Table 1 contd….

22.	**Zygophyllaceae**			
	Tribulus terrestris	NFW / C	R	Painful micturition
23.	**Asclepiadaceae**			
	Tylophora indica	NFW	Tr	Ashtma, bronchitis, whooping cough
	Hemidesmus indicus	NFW	Ex	Blood purifier
	Gymnema sylvestre	F/NFW	End	Diabetes
	Calotropis procera	NFW	R	Rheumatic pain
24.	**Convolulaceae**			
	Evolvulus alsinoidesl	NFW	R	Brain tonic, high blood pressure
25.	**Menispermaceae**			
	Tinospora cordifolia	F/NFW	R	Diabetes, Liver tonic
26.	**Verbenaceae**			
	Vitex negundo	NFW	R	Rheumatism
27.	**Hypoxidaceae**			
	Curculigo orchioides	F/NFW	End	Tonic
28.	**Zingiberaceae**			
	Curcuma amada	F/C	Ex	Skin disease, blood purifier, diabetes
	Curcuma angustifolia	F/C	R	Skin disease, blood purifier, diabetes
	Curcuma domestica	F/C	R	Skin disease, blood purifier, diabetes
29.	**Liliaceae**			
	Asparagus racemosus	NFW/F	End	General tonic
	Chlorophytum spp.	NFW/F	End	General tonic
	Gloriosa superba	NFW/F	Ex	Anthelmentic, Easy child birth
30.	**Costaceae**			
	Costus speciosus	NFW/F	R	Tonic, contraceptives
31.	**Cyperaceae**			
	Cyperus spp.	C/NFW	A	Hair tonic, aroma therapy
32.	**Poeaceae**			
	Cymbopogon martinii	NFW	R	Aroma therapy

Abbreviateions: C - Crop land; F - Forest land; R - Rare; End - Endangered; NFW - Non forest wastelands; A - Abundant; Tr - Threatened; Ex - Prone to extinction

increasing ecosystem productivity and economic productivity for enhancement of farm income along with conserving our rich heritage of medicinal herb diversity of the region in particular.

More than 125 species of medicinal and aromatic herbs belonging to 40 families were found in Malwa plateau region of Madhya Pradesh. Out of above 75 species belongings to 32 families were dominantly occurring in Malwa plateau region of Madhya Pradesh. Diversity of medicinal and aromatic crops varied with natural habitats *i.e.* crop land, forest land, grazing land and non forest waste land. Availability status of most of the species was rare whereas some species were categorized under endangered category. Some species were at the verge of extinction due to heavy exploitation.Threatened species are those who were overexploited and will become endangered in 2-3 years if not protected. Hence, there is an urgent need to apply strategic measures to protect these important medicinal plants through conserving them in their own habitat (*in- situ* conservation strategies) by prohibiting uncontrolled grazing and unscientific exploitation in forest lands.Species native to croplands and non – forest wastelands will be conserved by applying *ex-situ* conservation strategies (Herbal Garden, Seed Banks etc.).

REFERENCES

Asolkar, L.V., Kakkar, K.K. and Chakra, O.J. (1992). *Second supplement to glossary of Indian medicinal plants with active principles.* Part I (A-K). Publication and Information Division, CSIR, NEW DELHI, INDIA, pp. 205-206.

Budavari, S. Eds (2001). In : *The Merck Index*, 13th Edn., Merck & Co., Inc., Whitehouse Station, NJ, 4802, 1628.

Gamble, J.S. (1935). The Flora of the Presidency of Madras. Adlard & Son Ltd., LONDON.

Harshburger, J.W. (1896). The purpose of ethnobotany. *Bot. Gaz.*, **31**:146-154.

Hooker, J.D. (1982-97). *The Flora of British* India, Vol. 1 -6, London : Reev and Co; 1872- 1897.

Ignacimuthu, Savarimuthu (2006). Medicinal plants used by traditional healers in Kancheepuram District of Tamil Nadu, India. *J. Ethnobiol Ethnomed.*, **2**: 43.

Ignacimuthu, S., Ayyanar, M. and Sankara Sivaraman, K. (2006). Ethnobotanical investigations among tribes in Madurai District of Tamil Nadu (India). *J. Ethnobiol Ethnomed.*, **2** : 25.

Jain, S.K. (1964). The role of botanist in folklore research. *Folklore*, **5** : 145–150.

Jain, S.K. (1995). *Manual of ethnobotany,* Scientific Publishers, Jodhpur.

Jain, S.K. and Rao, R.R. (1976). *A handbook of field and herbarium methods*. Today and Tomorrow Printers and Publishers, NEW DELHI (INDIA).

Joy, P.P., Thomas, J., Mathew, S. and Skaria, B.P. (2001). Medicinal plants. *Tropical orticulture Vol. 2*. (eds. Bose, T.K., Kabir, J., Das, P. and Joy, P.P.). Naya Prokash, Calcutta (W.B.) INDIA, pp. 449-632.

Kirtikar, K.R. and Basu, B.D. (2001). *Indian medicinal plants*, Vol. 1. Lalit Mohan Basu, Allahabad, India, pp. 35-45.

Muthu, Chellaiah, Ayyanar, Muniappan, Raja, Nagappan and

Patel, K.C. (2002). Floristics and Ethnobotanical Studies on Danta Forest of North Gujarat; Ph.D. Thesis, Sardar Patel University, Vallabh Vidyanagar (GUJARAT) INDIA.

Sanjappa, M. (2005). Plant diversity in India—status, conservation and challenges (P. Maheshwari Medal Award Lecture). In: XXVIII, Conference of Indian Bot. Soc., Oct., **24**(26): 5-6.

Sankaranarayanan, S. (2008). *Medical taxonomy of angiosperms: Recent trends in medicinal uses and chemical constituents*. 1st ed. Harishi Puplication. India pp. 741-742.