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WEED DIVERSITY AND THEIR ETHNOMEDICINAL USES IN THE PARNER TAHSIL, DIST. AHMEDNAGAR, MAHARASHTRA (INDIA)

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ABSTRACT

An ethnobotanical exploration was carried out during 2010-2012 in the Parner tahsil of Maharashtra State. The aim of this study was the identification and documentation of ethnomedicinally important weed flora found in the tehsil, a drought prone area of Maharashtra. Total of 61 weed species belonging to 55 genera and 33 families were documented having medicinal importance. Out of 33 weed families 4 were monocotyledons (with 5 genera and 5 species) and 29 were dicotyledons (with 50 genera and 56 species). The ratio of monocotyledon to dicotyledon families is 1: 7.75. Family Solanaceae contributed significant number of species (7 species), followed by Euphorbiaceae and Asteraceae (6 species each), Amaranthaceae (5 species), Fabaceae (4 species), and Cleomaceae, Malvaceae, Cyperaceae and Verbenaceae (2 species each). The rest of the families were represented by only one species each. These weeds are used by local populace for the treatment of various diseases and disorders of human. Data was systematically arranged in alphabetic order of botanical name, family, vernacular name, flowering and fruiting period, part(s) used and ethnomedicinal uses. It was found that the area is rich in indigenous knowledge associated to weeds but still there is large number of underutilized weeds which could not prove useful yet. This information will be beneficial in public health, research and providing lead to plants that can be useful in future for utilization and conservation of indigenous knowledge of weeds. Further studies on the phytochemical screening of these native ethnomedicinal weeds may lead to the discovery of new bioactive molecules towards the development of drugs for safer use. On the other hand, the above findings may be of immense help to the labourers or marginal farmers to get additional livelihood for organized collection, processing and marketing of these medicinal crop weeds depending on the demand of the pharmaceutical houses.

Keywords: *Weeds, Ethnomedicinal Weeds, Indigenous Knowledge, Parner Tahsil, Maharashtra*

INTRODUCTION

Weeds are a serious problem in agriculture and tremendously reduce the productivity of agricultural trends by competing with crop plants for water, mineral nutrients, space and light. Weeds can be defined as the plants growing in the wrong places from farmers' point of view. These are comprised of more aggressive, troublesome and undesirable elements of the world's vegetation (King, 1974). More than 80% of the developing world continues to rely on traditional medicines predominantly plants for primary healthcare (Farnsworth and Soejarto, 1991; Pei, 2002). Global demand for herbal medicine is not only large, but also growing (Srivastava, 2002). The market for ayurvedic medicines is estimated to be expanding at 20% annually in India (Subrat, 2002). Only 15% pharmaceutical drugs are consumed in developing countries, and relatively more affluent people take a large proportion of even this small percentage (Toledo, 1995). Weeds are one of the major additional source of the medicinal importance in the human diet.

These weeds are also used by vaidyas for different formulation and maximum pharmaceutical industries to synthesis different drugs. Thus medicinal plants can prove a significant source of income for rural life in developing countries.

Survey and documentation of a country's or community's natural resources is an important prerequisite for proper utilization of its raw materials. Full knowledge of various plants is necessary, so as to change proper utilization (Choudhari *et al.*, 2008). There is a need for discovery of new secondary metabolic

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compounds that are safe, effective, which over compass resistance and also less toxic (Ngono *et al.*, 2011).

Indigenous people have long history and expertise in the use of medicinal plants, but information on these plants and their uses is mainly passed from one generation to the other orally and even to date is poorly documented (Mulay and Sharma, 2012). The lack of organised documentation for medicinal plant knowledge may also contribute to the loss of medicinal plant knowledge, particularly of plants and that neglected or non-preferred (Musa *et al.*, 2011). Like every communities in the developing nations, the people of Parner tahsil depend on medicinal plants to meet their domestic and health needs. However, ethnomedicinally, the area remains unexplored and no comprehensive account of local tradition is available. Hence, to fill up the gap the present investigation has been undertaken.

Study Area

Parner is one of the Tahsil in Ahmednagar district of Maharashtra (India). Total area of the Tahsil is 1976.76 Sq.km. Except 14 villages, rest of the Tahsil totally depends on rain water for irrigation. The tahsil is drought prone with very less rainfall. As there are extremities in temperature, humidity and less average rainfall, it has very characteristic floral diversity. The study area lies between 18° 49' 40" to 19° 21' 13" N latitude and 74° 10' 22" E to 74° 38' 34" E longitude at an elevation of about 750-800 m above mean sea level.

The weather, in general, can be said to be hot and dry. The average day temperature ranges from 25°C to 36°C. Relative humidity is extremely low for major part of the year (between 35 to 51%) while it is highest (83%) during monsoon.

MATERIALS AND METHODS

Data was collected from the farmers, old knowledgeable persons and medical practitioners. In this study, data collection was based upon medicinally useful weeds, plant part(s) used, local name, flowering and fruiting period and ethnomedicinal uses. As the flowering and fruiting seasons are different, floristic survey of crop fields were conducted at regular intervals to gather information of different stages of development of the weed specimens. Most of the plants were collected fresh, photographs of collected plant species were also made, so as to enhance their identification. The plant species obtained from the survey were identified using keys and description given in The Flora of Presidency of Bombay (Cooke, 1958), Flora of Marathwada (Vol. I and Vol. II) by Naik (1998), and Flora of Maharashtra Dicotyledons (Vol. I) by Singh and Karthikeyan (2000), Flora of Maharashtra Dicotyledons (Vol.II) by Singh (2001). Field and herbarium methods were carried out in the same manner as suggested by Jain and Rao (1977). As regards the botanical explorations in Ahmednagar, several people have made notable contributions, such as Pradhan and Singh (1999), Santapau (1951), Santapau and Irani (1962). Most of these works resulted in enrichment of the herbaria except few publications, like Shirke (1978), Hooker (1872-1897), Cooke (1958) have recorded plants from Ahmednagar district in their publications.

RESULTS AND DISCUSSION

Plants have been used as traditional medicine for several thousand years. The exploration of ethno-medicinal survey was carried out in Parner tehsil of Maharashtra (India) a drought prone area during 2010-2012. The present research paper deals with preliminary contribution to the use of medicinally important weeds. As a whole about 61 weed species belonging 55 genera and to 33 families were collected and documented. Table 1 gives a concise information on the medicinal plant species, their family, vernacular name, habit, flowering and fruiting period, plant part used and medicinal uses. Among 33 families, there are 4 families of monocot (having 5 genera and 5 species) and 29 families of dicot (having 50 genera and 55 species). The ratio of monocotyledonous to dicotyledonous families is 1:7.75, for genera the ratio is 1:10.0 and for species it is 1:11.2. Total genus species ratio of the medicinally important weeds of the Parner tahsil is 1:1.12 (Table 2). According to the percentage data the most important family in terms of species representation was Solanaceae 12.72% (7 species), followed by Asteraceae 10.90% (6 species), Euphorbiaceae 10.90% (6 species), Amaranthaceae 9.09% (5 species),

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Fabaceae 7.27% (4 species), Cleomaceae, Cyperaceae, Verbenaceae and Malvaceae contributed 3.63% (2 species each) Remaining 24 families contributed 1.81% with single species. These medicinal weeds are reasonably effective remedies for different diseases such as dysentery, vomiting and malarial fever (*Cyperus rotundus*), jaundice, ulcer, genitourinary disorders (*Phyllanthus niruri*), nervous disorders (*Sida cordifolia*), joint pains (*Jatropha curcus*), bronchial asthma (*Solanum virginianum*), bone fracture (*Vitex nigundo*), urinary diseases (*Xanthium strumarium*), wound healing (*Tridax procumbens*), healing fracture bones (*Oxalis corniculata*), headache (*Eclipta prostrate*).

Table 1: Weeds used against various diseases

Botanical Name/Family/ Vernacular Name	Habit	Flowering/ Fruiting period	Part Used	Uses
<i>Abutilon indicum</i> (L.) Sweet. Malvaceae Mudra	Shrub	Throughout the year	Leaf, bark, seeds and roots	Dysentery and piles
<i>Acacia nilotica</i> (L.) Wild Mimosaceae Babhul	Tree	June - Sept.	Leaves, bark, seeds, pods	Anti-oxident
<i>Achyranthes aspera</i> L. Amaranthaceae Aghada	Herb	Nov. - Jan	Whole plant	Foot diseases
<i>Alternanthera sessilis</i> Br. Amaranthaceae	Herb	July -Dec.	Whole plant	Antiseptic property
<i>Amaranthus spinosus</i> L. Amaranthaceae Kante-math	Herb	Sept.	Leaf, Roots and seeds	Anti-inflammatory, antimalarial, antibacterial, antimicrobial, antidiuretic, antiviral and hepatic disorders
<i>Argemone maxicana</i> L. Papavaraceae Piwala Dhotra	Herb	All the year	Leaves	Skin diseases
<i>Aristolochia bracteata</i> Retz. Aristolochiaceae	Herb	Aug.- Nov.	Whole plant	To rectify menstrual disorders
<i>Bacopa monnieri</i> L. Scrophulariaceae Nir Bramhi	Herb	April- Dec.	Whole plant	Against epilepsy, to reduce blood pressure
<i>Barleria prointis</i> L. Acanthaceae Kate Koranti	Shrub	October	Roots and leaves	Boils, swellings and tooth-ache
<i>Basella rubra</i> L. Basellaceae Velbondi	Herb	Oct.- Dec.	Leaf	Diarrhoea and piles
<i>Boerhavia diffusa</i> L. Nyctaginaceae Ghentuli	Herb	August - Dec.	Root Leaves	Jaundice Ripening of boils
<i>Calotropis gigantea</i> R.Br. Asclepiaceae Mandar	Shrub	Feb. - July	Roots, Flower, latex	Inflammatory swellings and rheumatic joints

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<i>Cardiospermum halicacabum</i> L. Sapindaceae Kapalphuti	Climbing herb	December	Leaf	Earache
<i>Cassia tora</i> L. Fabaceae Takla	Herb	Nov. - Dec.	Leaf	Purgative
<i>Celosia argentea</i> L. Amaranthaceae Kombada	Herb	Oct. - Dec.	Whole plant	Astringent and haemostatic
<i>Clematis triloba</i> Heyne Ranunculaceae Morvel	Climber	Sept. - Nov.	Whole plant	Astringent and haemostatic
<i>Cleome gynandra</i> L. Cleomaceae	Herb	June	Leaves	Rheumatism and headache
<i>Cleome viscosa</i> L. Capparidaceae Piwali Tilwan	Herb	May-Oct.	Whole plant	Pimples and boils
<i>Clitoria ternatea</i> L. Fabaceae Gokarna	Twining herb	June - Jan.	Whole plant	Against skin itching
<i>Commelina benghalensis</i> L. Commelinaceae Lamb kena	Herb	August- Dec.	Whole plant	Nervous system related disorders
<i>Cynadon dactylon</i> L. Poaceae Harli	Herb	Most part of the year	Leaf	Injury, sprains, bone fracture, food poisonin
<i>Cyperus rotundus</i> L. Cyperaceae Nagarmotha	Herb	July - Dec.	Whole plant	Malerial fever, dysentery, vomiting
<i>Datura metal</i> L. Solanaceae Kala Dhotra	Herb	June - Oct.	Fruit	Toothache
<i>Digera muricata</i> (L.) Mert Amaranthaceae Kunjir	Herb	Sept. - Nov	Whole plant	Urinary discharges
<i>Echinops echinatus</i> Roxb Asterceae Utaktar	Herb	Nov. - Jan.	Whole plant	Skin itching
<i>Eclipta prostrate</i> L. Asterceae Maka	Herb	Oct.- Dec.	Leaves	Headache, toothache and skin diseases
<i>Euphorbia hirta</i> L. Euphorbiaceae	Herb	Oct. - March	Whole plant	Cold and cough, asthma, bronchitis
<i>Euphorbia heterophylla</i> L. Euphorbiaceae Dudhani	Herb	Sept. - March	Leaf	Gonorreal disorders
<i>Euphorbia hirta</i> L. Euphorbiaceae	Herb	Throughout the year	Whole plant	Purifying blood, skin diseases

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<i>Glossocardia bosvallea</i> Asteraceae Pit papada	Herb	August-Oct.	Root	Wound healing, Against fever
<i>Gynandropsis pentaphylla</i> D.C. Prodr. Cleomaceae Pandhri tilwan	Shrub	June	Whole plant	Cough and bronchial infections
<i>Jatropha curcas</i> Euphorbiaceae Mogli eranda	Herb	Sept.- Nov.	Stem	Joint pains
<i>Kyllinga triceps</i> Rottb. Cyperaceae	Herb	Sept.	Whole plant	Diabetes
<i>Lantana camara</i> L. Verbenaceae Ghaneri	Shrub	Throughout the year	Leaves	Applied to wounds
<i>Martynia annua</i> L. Martyniaceae Vinchu	Herb	July - August	Whole plant	Wound healing
<i>Mimosa pudica</i> L. Leguminoceae Lajalu	Shrub	Sept.-Oct.	Root	Sexual Weakness & Epilepsy
<i>Nerium indicum</i> Mill. Apocynaceae Kanher	Shrub	Throughout the year	Whole Plant	Malaria, Ulcer
<i>Oxalis corniculata</i> L. Oxalidaceae Ambusi	Herb	Oct. - May.	Whole Plant	To purify the blood, open wound and healing fracture bones
<i>Phyllanthus amarus</i> Schum. & Thonn. Euphorbiaceae	Herb	July- August	Whole Plant	Jaundice, Dairrhea, Dysentery, Inflammation.
<i>Phyllanthus niruri</i> L. Euphorbiaceae Bhuiavali	Herb.	July - Aug.	Whole Plant	Dysentery, jaundice, ulcer, genitourinary disorders
<i>Physalis angulata</i> L. Solanaceae Popati	Herb	Jan. - Feb.	Whole Plant	Jaundice, Ulcer, Fracture, Abdominal Pains, Fever.
<i>Physalis minima</i> L. Solanaceae Ran Popati	Herb	August	Whole Plant	Laxative, expectorant and tonic.
<i>Plumbago zeylanica</i> L. Plumbaginaceae Chitrak	Herb	Throughout the year	Root and seed	Antiseptic, antiparasitic
<i>Portulaca oleracea</i> L. Portulacaceae Ghol	Herb.	Aug.- Dec.	Stem, leaves	Against burning sensation of the hands and feet
<i>Ruta graveolens</i> L. Rutaceae Satap	Herb	Sept.- Oct.	Whole Plant	Headache, for improving eyesight
<i>Sesbania grandiflora</i> Poir.	Tree	Throughout the	Leaves, Flower	Fever, indigestion,

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Fabaceae		year		stomach disorders
Hadga				
<i>Sida cordifolia</i> L.	Shrub	Aug. - Sept.	Leaves	Nervous disorder, Wound healing
Malvaceae				
Chikana				
<i>Solanum nigrum</i> L.	Herb	Throughout the year	Leaves and fruits	Indigestion, piles
Solanaceae				
Kanguni				
<i>Solanum virginianum</i> L.	Herb	Throughout the year	Leaves, seeds, fruits	Toothache, cough and cold and bronchial asthma
Solanaceae				
Ranwangi				
<i>Solanum xanthocarpum</i> L.	Herb	Throughout the year	Leaves, Seeds, Fruits	Bronchial Asthama, Tooth Ache, Cough and Cold.
Solanaceae				
Bhuiringni				
<i>Sonchus asper</i> Hill	Herb	Jan. - March	Whole Plant	Skin affected by burning sensations
Asteraceae				
Mhatara				
<i>Tephrosia purpurea</i> (L.) Pers.	Herb	Oct. - Jan.	Leaves, Seeds	Blood purifier
Fabaceae				
Unhali				
<i>Tinospora cordifolia</i> DC	Climber	Jan.	Leaves	Fracture and painful joints
Menispermaceae				
Gulwel				
<i>Tribulus terrestris</i> L.	Herb	Throughout the year	Leaf	Kidney related diseases
Zygophyllaceae				
Sarata				
<i>Tridax procumbens</i> L.	Herb	Throughout the year	Leaf	Wounds
Asteraceae				
Ekdandi				
<i>Triumfetta rotundifolia</i> Lam.	Herb	Aug.	Whole plant	Gonorrhoea
Tiliaceae				
Zinjud				
<i>Typha angusifolia</i> L.		Aug.	Pollengrains	Kidney stone
Typhaceae				
<i>Urginea indica</i> Kunth Enum	Herb	Dec.- Feb.	Bulb	Cough, bronchitis and for promoting urination
Liliaceae				
Jangli Kanda				
<i>Vitex negundo</i> L.	Shrub	Throughout the year	Leaf	Expocortant and tonic, headache, rheumatism, bone fracture
Verbenaceae				
Nirgudi				
<i>Withania somnifera</i> Dunal	Herb	Sept.	Leaves, Roots and Seeds	Cough, Fever, Ulcer, Tooth ache, Stomach Problems, Regulation of manstrual Cycle.
Solanaceae				
Ashwagandha				
<i>Xanthium strumarium</i> L.	Herb.	May. - Sept.	Leaves, Roots and Seeds	Chronic Maleria, Urinary dieseas.
Asteraceae				
Landga				

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It was reported by Dhole *et al.*, (2009) that *Bacopa monneri* is effective in high blood pressure, urinary tract infections, hepatitis, *Argemon maxicana* in skin diseases, ulcer, jaundice and root and leaf paste of *Cassia tora* are applied skin diseases, eczema acne, psoriasis, boiled and cuts. Muly and Sharma (2012) reported 30 weed species which are locally used by the local inhabitants of Ahmednagar district for common diseases such as cough, urinary problems, arthritis, jaundice, etc.

Table 2: Floristic analysis of ethnomedicinally important weeds

	Monocots		Dicots		Total	Ratio	
	Total No.	%	Total No.	%		Monocot	Dicot
Families	4	12.12	29	87.78	33	1:	7.75
Genera	5	9.09	50	90.90	55	1:	10.00
Species	5	8.19	56	91.80	61	1:	11.2
Genus-species ratio	1:1		1:1.12		1:1.10	1:	1.12

The weeds were found to be used for the treatment of common human diseases, including fever, diarrhoea, dysentery, cough and cold, diabetes, jaundice, joint pain, skin infections, food poisoning, back ache, respiratory disorders, gynaecological problems, epilepsy, nervous depression, piles. Reports are also available on different useful weeds from different parts of the Maharashtra State (Kamble *et al.*, 2008; Yadav and Bhamare, 1989; Sonawane *et al.*, 2012; Patale *et al.*, 2015; Patil and Patil, 2005). However the present investigation will certainly highlights new findings about the weeds relating to their sustainable use. The data may provide enough opportunities to study their actual principles in the treatment of human diseases by rural communities. Even though their medicinal value and economic importance are elaborated, pharmacological uses of these weed demand further intensive research for finding uses for human welfare.

Conclusion

The present study helped the social importance of the floristic richness in the Parner tahsil of Maharashtra particularly regarding the significance of medicinal plants in primary healthcare. It is evident that the age old herbal cure practice in the rural areas is losing its popularity due to easy accessibility to modern medicines and ignorance about the potential medicinal weeds. In order to remain away from relying upon antibiotics as well as synthetic medicines which have many negative side effects, the ethno medicinal plants documented for their potential against various ailments are required to be analyzed scientifically for the discovery of new bioactive principles towards the development of drugs for safer use. Further, some species are fast dwindling mainly due to over exploitation, industrialization changes in climatic conditions and use of chemical herbicides. This has definitely affected the flora adversely. For controlling further loss and restoration of plant diversity in future, reorientation of the attitudes of the local community towards, restoration and maintaining biodiversity is of utmost importance.

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REFERENCES

Choudhari Rai HN, Pal DC and Tarafdar CR (1985). Less known uses of some plants from the tribal areas of Orissa. *Bulletin of Botanical Survey of India* **17** 132-13.
Cooke T (1958). *The Flora of Presidency of Bombay*, Vol. 1-3, reprinted edition (Government of India).
Farnsworth N and Soejarto DD (1991). Global importance of medicinal plants, In: *Conservation of Medicinal Plants*, edited by Akerele O, Heywood B and Synge H (Cambridge University Press, Cambridge, United Kingdom) 25-51.

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Hooker JD (1872 - 1897). *The Flora of British India* London, VII Vols.

Jain SK and Rao RR (1967). *A Handbook of Field and Herbarium Methods* (Today and Tomorrow Printers and Publishers, New Delhi).

Kamble SY, More TN, Patil SR, Pawar SG, Ram Bindurani and Bodhankar SL (2008). Plants used by tribes of Northwest Maharashtra for the treatment of gastrointestinal disorders. *Indian Journal of Traditional Knowledge* 7(2) 321- 325.

King LJ (1974). *Weed of the World* (Willey Eastern Private Limited, New Delhi).

Mulay JR and Sharma PP (2012). Some useful weeds of Ahmednagar district, Maharashtra, India. *International Multidisciplinary Research Journal* 2(12) 05–08.

Musa MS, Abdelrasool FE, Elsheikh EA, Ahmed LAMN, Mahmoud ALE and Yagi SM (2011). Ethnobotanical study of medicinal plants in the Blue Nile State, South-eastern Sudan. *Journal of Medicinal Plants Research* 5(17) 4287 -4297.

Naik VN (1998). *Flora of Marathwada*, Vol. I (Amrut Prakashan, Aurangabad).

Naik VN (1998). *Flora of Marathwada*, Vol. II (Amrut Prakashan, Aurangabad).

Ngono Ngare RA, Koanga Mogtomo ML, Tchinda Tiabou A, Magnifouet Nana H, Motso Chieffo PR, Mballa Bounou Z, Ebelle Etame RM, Ndifor F, Biyiti L and Amvan Zollo PH (2011). Ethnobotanical survey of some Cameroonian plants used for the treatment of viral disease. *African Journal of Plant Science* 5(1) 15 -21.

Patale C, Nasare P and Narkhede S (2015). Ethnobotanical studies on the medicinal plants of Darekasa hill range of Gondia district, Maharashtra, India. *International Journal of Research in Plant Science* 5(1) 10 -16.

Patil MV and Patil DA (2005). Ethnomedicinal practices of Nashik District, Maharashtra, India. *Indian Journal of Traditional Knowledge* 4(3) 287 - 290.

Pei Shengji (2002). Ethnobotany and modernisation of Traditional Chinese Medicine. In: *Proceedings of Wise Practices and Experimental learning in the Conservation and Management of Himalayan Medicinal Plants, Kathmandu, Nepal*.

Pradhan SG and Singh NP (1999). *Flora of Ahmednagar District, Maharashtra* (Bhishen Singh Mahendra Pal Singh, Dehradun).

Santapau H (1951). The genus *Dioscorea* in Bombay. *Ibid* 49 624-636.

Santapau H and Irani NA (1962). *The Asclepiadaceae and Periplocaceae of Bombay* (University of Bombay) Botany 4(iv) 118.

Shirke DR (1983). The study of the Flora of Ahmednagar. *Journal of University of Poona Science & Technology* 56 55-70.

Singh NP and Karthikeyan S (2000). *Flora of Maharashtra State Dicotyledons*, Vol (1) (Botanical Survey of India, Kolkata).

Singh NP, Laxminarasimhan P, Karthikeyan S and Prasanna PV (2001). *Flora of Maharashtra State Dicotyledons*, Vol (II) (Botanical Survey of India, Kolkata).

Sonawane VB, Saler SR, Sonawane MD and Kadam VB (2012). Ethnobotanical studies of Mokhada, District Thane. *International Journal of Life Science and Pharma Research* 2(2) 88-93.

Srivastava R (2002). Studying the information needs of medicinal plants stakeholders in Europe. *Traffic Dispatches* 15 5.

Subrat N (2002). Ayurvedic and herbal products industry: an overview. In: *Proceedings on Wise Practices and Experimental learning in Conservation and Management of Himalayan Medicinal Plants, Kathmandu, Nepal*.

Toledo VM (1995). New paradigms for a new ethnobotany: reflections on the case of Mexico. In: *Ethnobotany Evolution of Discipline*, edited by Schults RE and Von Reis S (Chapman and Hall, London) 75-88.

Yadav SR and Bhamare PB (1989). Ethnomedico-botanical studies of Dhule forest in Maharashtra State. *Journal of Economic and Taxonomic Botany* 13 445- 460.