***Short communication***

**Ethnomedicinal Study Of Some Important Plants Of Khandesh Region, Maharashtra State, India**

**Abstract:** Ethno medicine is a subfield of ethno botany that deals with the study of traditional medicines with relevant written sources as well as whose knowledge has been orally transmitted over the centuries1. Plants are rich source of medicine in developing countries. 80% of the world’s population relies on traditional medicines to maintain its health. The increasing emphasis on research in Ayurveda, rediscovering the traditional systems of medicine and utilization of medicinal herbs to reduce the side effects of modern medicines demand a greater necessity to explore this vast wealth of crude drugs. Information on plant species which are traditionally used as medicines to treat different diseases obtained from the Bhil, Banjara, Pawra, Gavit and Pardhi tribal community and local people was collected by conducting an extensive ethnobotanical survey in the tribal zones of Jalgaon and Dhule tehsil. It was observed that this community uses traditional medicines to cure common diseases like cough, cold, fever, jaundice, menstrual problems, migraine to disorders like rheumatism, arthritis and even used to treat snake bite or scorpion bite victims. This information was used to tap the potential of locally available medicinal plants resources.

**Keywords:** Raktapunarnava, (*Boerrhavia diffusa*) glory lily (*Gloriosa superba*), kali musali (*Curculigo orchioides*), kalmegh (*Andrographis paniculata*), baheda (*Terminalia bellirica*), ethnomedicine.

**Introduction**: Indian plant drugs caught the attention of west since the beginning of colonial days. “India is a leading producer and exporter of medicinal plants. Medicinal plants, their extracts and pure natural products are produced in the herbal drug industries. There are as many as 700 species of medicinal plants used in number of herbal formulations available in India. Satpuda range covering entire Khandesh region has a tremendous wealth of medicinal plants. Even today Bhills, Gavits, Padvis, Tadvis and Valvis tribes are exclusively dependent on forests and have their own system of herbal medicine”2,14. “From the past few years exclusive as well as extensive work in identification, documentation and recognition of traditional medicine is being carried out in India. Investigation of traditional medicine is very important for the welfare of rural and tribal communities for the treatment of conventional illness. This may add to the expensive and inadequate health care facilities in rural areas. Ethnomedicinal documentation of tribal health system will be of great advantage to pharmacologists to develop economical and herbal medicines for the treatment of several diseases and disorders”15.

This paper is an attempt to compile the ethnomedicinal information on some important plants available in the Khandesh region.

The tribals of the eastern ghat mountain ranges which extends in the state of Odisha, traveling south through Andhra Pradesh and Telangana, terminating finally in Tamil Nadu use plant extracts for the treatment of animal bites especially snake bites and stings.Plant species were most frequently utilized for issues relating to the stomach and skin disease. The Western Ghat Mountain range begins in the south eastern corner of Gujarat, traversing the states of Maharashtra, Goa, Karnataka, and Kerala. Here the plant species are used for treatment of fevers and malaria. The tribes of north eastern region use plants for the treatment for cough, cold, snake bite, asthma, rheumatic fever, and hemorrhoids.

**Study Area:** Present study was carried out in different villages of east Khandesh of Jalgaon district and west Khandesh of Dhule district.



**Figure 1: Map of Adivasi Tehsils of Khandesh Region (Maharashtra)**

**Methodology**: Field tours were conducted in the tribal zone of chopda and Dhulia taluka for collecting the information on ethnomedicinal plants used to cure various diseases.

First-hand information was gathered through group discussions with tribal and rural people during field visits. The information was also collected from traditional healers such as Vaidyas and Daiyas. The collected data was further confirmed with the available literature. The fresh specimens of the plants were collected and identified by experts, matching with authentic herbarium, books on flora and standard photographs. The collected plant specimens are deposited in the herbarium of the Department of Pharmacognosy, MET’s Institute of D. Pharmacy, Maharashtra (Herbarium Sheet No. HM 1 to HM 20).

**Result and Discussion:** During the survey of the tribal zone of Jalgaon and Dhulia tehsil about 31 different plant and plant parts used as medicine for the treament of various diseases and ailments were revealed. Analysis of the data collected in the field tours identified 20 important plants which are enumerated further.

**Enumeration of the Important Ethnomedicinal Plants of Khandesh Region**:

1. *Boerrhaavia diffusa (Nyctaginaceae):* “A perennial herb commonly known as rakta punarnava or hog weed. Punarnava contains alkaloids punarnavine and punarnavoside, an antifibrolytic agent. It is mainly used as a diuretic and as an expectorant. Punarnava is stomachic and is prescribed in the treatment of jaundice. The decoction of the leaves or the entire plant is used for treatment by the tribals”14.
2. *Gloriosa superba (Liliaceae): “*Commonly known as Gloriosa or glory lily the plant is a short lived herbaceous climbing perennial. The dried tubers which is used contains colchicine along with its different derivatives in minor quantities. It is mainly used in the treatment of Gout and inflammation”14.

3. *Curculigo orchioides (Amaryllidaceae): “*A perennial herb *c*ommonly known as kali musali. The dried rhizomes mainly used as drug contains starch, tannins, enzymes and glycoside Curculigoside and syringic acid. It is mainly used in the treatment of skin disorders, jaundice, as an aphrodisiac, decreased sperm count, general body weakness”14.

4. *Tinospora cordifolia (Menispermaceae): “*Commonly known as Guduchi, it is a herbaceous vine. The stems used as drug contains diterpene compounds including tinosporone, tinosporic acid, cordifolisides A to E, syringen, the yellow alkaloid, berberine. It is used as a hepatoprotective and immunomodulatory agent”14.

5. *Terminalia bellirica (Combretaceae):* “It is a large tree which occurs in most valleys of India. Commonly known as Baheda. The dried ripe fruits used as drug contains 32% tannins, colouring matter, gallic acid, ellagic acid, gum and sugar. It is used as an astringent, demulcent and in preparation of soap. Also used in dyspepsia and diarrhoea”14.

6. *Holarrhena antidysenterica (Apocynaceae): “*Commonly known as Kurchi, it is a species of flowering plant. The dried stem bark used as medicinal agent contains C21 group steroidal alkaloids including kurchicine, nor conessine, isoconessine, holarrhime and holarrhidine. It is used as antiprotozoal in activity and used to treat amoebic dysentery”14.

7. *Tribulus terrestris (Zygophyllaceae): “*It is a trailing perennial, hirsute, procumbent and branched herb. Commonly known as Puncture vine. The dried ripe fruits used as medicine contains alkaloids harmine and harman. It also contains saponins, flavonoids, fixed oil, resin and traces of essential oil.Fruits are used as diuretic, tonic and also in the treatment of calculus affections and painful micuritions”14.

8. *Eclipta alba (Asteraceae):* “Commonly known as Bhringaraj, it is an annual, erect, branched, and creeping herb with rooting at nodes. It mainly contains coumestans, alkaloids, thiopenes,flavonoids, polyacetylenes, triterpenes and their glycosides. Ithas traditional external uses, such as for athlete's foot, eczema and dermatitis, and on the scalp to address hair loss. It is reported to improve hair growth and color”14.

9. *Cassia fistula (Fabaceae)*: “Cassia fistula is an deciduous tree commonly known as Indian labernum or golden shower tree. Its main chemical components are anthraquinones, fistulic acid, rhein, rheinglucoside, sennosides A and B, phlobaphenes, emodin, chrysophanic acid, fistuacacidin, lupeol, beta-sitosterol and hexacosanol. The fruits are used as purgative”14.

10. *Termanalia arjuna (Combretaceae)*: Commonly known as Arjuna, it is a large deciduous tree with spreading crown and drooping branches. The bark which is used as medicine mainly contains tannins and triterpenoid saponins. It is mainly used as cardiotonic.

11. *Ensete superbum (Musaceae)*: Erect shrubs with unbranched globose leafsheaths. Commonly known as Rankeli, Jangali kela. Phytochemically, the plant was found to contain fats, triterpenoids, flavonoids, steroids, tannins, proteins and carbohydrates. The ointment of leaf ash in butter as base is applied on leucoderma spots. Seed and stem are given in mad dog bite. Root and stem decoction are taken in the morning for a month as tonic and in the treatment of venereal diseases.

12. *Costus speciosus (Zingiberaceae)*: Commonly known as Crepe Ginger or Pev, Crepe Ginger is a native rhizomatous herb that can grow to 3 m in height. “Rhizome paste applied externally on routine tumors. Decoction of powdered rhizome is given internally in constipation and in stomachache. The rhizomes of Costus speciosus are a good source of saponin like diosgenin, sapogenin, tigogenin, steroids and alkaloids”.3

13. *Curcuma psudomontana (Zingiberaceae):* An aromatic herb commonly known as Hill turmeric, Vedi halad or ranhalad. Chemically it contains Curcumanolide-B and Curcumadiol. The paste of tubers prepared in sulphur is applied externally to give relief in muscle stress.4

14. *Eulophia nuda (Orchidaceae): “* Commonly known as Spectacular Eulophia, Anbar kand or Amarkand, it is a small perennial terrestrial herb. From this plant, only a small number of substances have been identified, including phenanthrene derivatives and benzylated phenanthrene derivatives. Raw tuber is eaten in rheumatoid arthritis. It is also used the treatment of tumors, scrofulous glands of neck, bronchitis, blood diseases, vermifuge, etc” 5.

15. *Remusatia vivipara (Araceae):* It is a Epiphytic or lithophytic herb, commonly known as Hitchhiker elephant ear, Rukhalu. Tubers contain starch and lectins. “Coconut oil-based ointment prepared from roasted tuber is applied externally in fungal alopecia. Paste of tuber is applied locally to treat boils” 6.

16. *Sterculia villosa (Sterculiaceae):* Commonly known as Elephant rope tree or Sardol, *Sterculia villiosa* is a tropical deciduous tree. Root powder with milk is given internally to facilitate delivery. Chemically it contains alkaloids, glycosides, tannins, flavonoids, aldehyde and reducing sugars. Pulverized bark poultice applied externally over affected parts in arthritis. Small quantity of gum mixed with honey taken in the morning is reported to be good for throat problems. Seed powder and jaggery (1:2) by weight (approximately 50 g) used to prepare tablets, which are eaten in empty stomach for a week to treat heart diseases and asthma 7, 8.

17. *Andrographis paniculata (Acanthaceae):* “Commonly known as King of bitters, Green chirata, Kalmegh or Kadechirayat. It has many important bioactive compounds such as diterpenoids, flavonoids and polyphenols. Diterpenoids, including andrographolide, neoandro-grapholide and dehydroandrographolide are the main determinants of Andrographis paniculata quality. The most common and abundant form is andrographolide.This herb is used by the tribal people for a variety of ailments like dysmenorrhoea, leucorrhoea, pre-natal and post-natal care, complicated diseases such malaria, jaundice, gonorrhea and general ailments like wounds, cuts, boils and skin diseases” 9.10.

18. *Bauhinia racemosa (Caesalpiniaceae)*: “It is a small crooked tree with drooping branches. Commonly known as Bidi leaf tree or Apta. The plant Bauhinia racemosa (Lam.) has chemical constituents as flavonoids, crude protein, and lipid, tri-terpenoids (α-amyrin), stilbenes (resveratrol), tetracyclic lupeol, betulin, β-sitosterol, and tetracyclic 2, 2- dimethyl chroman. Water extracts of bark, leaves and root taken two times daily after meal for 2-4 weeks in treatment of jaundice and liver disorders. The active chemical constituents impart a variety of other medicinal uses to the plant like antioxidant, antiulcer, anticancer, antihistamine, antidiabetic, anthelmintic, antimicrobial, antipyretic, and analgesic action. The plant also has nutritional importance” 11.

19. *Luffa acutangula (Cucurbitaceae):* “Luffa acutangula is a cucurbitaceous vine that is commercially grown for its unripe fruits as a vegetable. Commonly known as Ridged Gourd or Doadka. Fruit in the form of very fine powder is taken in body through nose for one week to protect from jaundice. The plant contains alkaloids, terpenoids, carotenoids and saponins. The Extract from different parts of plant are used as antidiabetic and CNS depressant” 12.

20. *Tabernaemontana divaricata* *(Apocynaceae): A*n evergreen shrub commonly known as Crepe Jasmine or Pinwheel Flower, Tagar or Tagari. It has rich presence of alkaloids and flavonoids. Root powder (100-200g) is boiled in water and the extract is taken thrice a day for two weeks in the treatment of jaundice. “It is used in traditional medicine as components of rejuvenating and neuro-tonic remedies. It is believed that these remedies can prevent forgetfulness and improve memory”13. Table 1.

**Table 1: Plant Botanical Name with Photograph.**

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| **Botanical Name with Photograph** | **Botanical Name with Photograph** |
| ***Boerrhaavia diffusa***  is | ***Gloriosa superba***  IMG_256 |
| ***Curculigo orchioides***  IMG_256 | ***Tinospora cordifolia***  IMG_256 |
| ***Terminalia bellirica***  IMG_256 | ***Holarrhena antidysenterica***  IMG_256 |

|  |  |
| --- | --- |
| ***Tribulus terrestris***  IMG_256 | ***Eclipta alba***  IMG_256 |
| ***Cassia fistula***  C:\Users\shree\Downloads\cassia.jpg | ***Termanalia arjuna***  IMG_256 |
| ***Ensete superbum***  IMG_256 | ***Costus speciosus***  IMG_256 |

|  |  |
| --- | --- |
| ***Curcuma psudomontana***  IMG_256 | ***Eulophia nuda***  IMG_256 |
| ***Remusatia vivipara***  IMG_256 | ***Sterculia villosa***  IMG_256 |
| ***Andrographis paniculata***  IMG_256 | ***Bauhinia racemosa***  IMG_256 |
| ***Luffa acutangula***  IMG_256 | ***Tabernaemontana divaricata***  IMG_256 |

**Conclusion:** Since ancient times, plants have been a primary source of medicine. Even in the modern times, plant-based systems continue to play an essential role in health care. Additionally, a significant portion of the currently available non-synthetic and/or semi-synthetic pharmaceuticals in clinical use is comprised of drugs derived from higher plants. The ethnomedicinal survey highlights the rich medicinal plant diversity of the Khandesh region, offering vast potential for further research.. The survey also revealed that the plants enumerated above are commonly available and some are cultivated as vegetables, avenue trees or crops. Hence, they can be taken up for further pharmacological and clinical studies. Also the survey revealed that the tribal people of Khandesh region possess good knowledge of herbal medicines and collection of information from these ethnic groups will provide searchlight for various new medicines. With increasing modernization, there is a risk of losing traditional knowledge on plant-based medicine. So, it is important to study and record this heritage. Such studies may provide some valuable information to phytochemists and pharmacologists in screening of individual plant species and in assessing potential medicinal uses of these plants in the treatment of various disorders.

**Disclaimer (Artificial intelligence):** Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

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