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# COMMONLY USED ETHNO-MEDICINAL AND ETHNO-VETRINARY PLANT RESOURCES FOR HUMAN AND ANIMALS AILMENTS FROM BHOR TAHSIL PUNE DISTRICT, MAHARASHTRA, INDIA.

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***Abstract:*** The traditional healers are lower caste of potters and barbers as well as members of the economic and social and religious groups locally called as Vaidyas, Vaidus or Bhagat. These traditional healers have time tested knowledge available through their ancestors from generation to generations. In recent years allopathic medicine may cure a wide range of human &animal diseases; however, its high prices and causing side-effects so many people to return to herbal medicines which have no side effects and cost effective. Very few medicinal plants are conserving in their kitchen garden for curing many diseases at community level. Bhor region in Pune district is hilly and remote area and lower caste people like Dhanger, Sutar, Sonar, Lohar, Kunbi, Maratha, Mahadeo-koli, Nahvi and Bhoi are residing in the area. During the scarcity of medicinal plants in the study area, 15 local healers cultivate useful medicinal plants in their kitchen gardens. They conserve vegetables, wild plants, ornamentals, hedge and medicinal plants and utilize them for local patients Five commonly occurred diseases such as fever, cold & cough, dysentery & diarrhoea, eye diseases, and wound healing were recorded for treatment of human and animal diseases The present paper deals with **30** plant resources belonging to **22** families **28** genera and **28** species.

**Key words**: *EM & EVM plant, human & animals diseases, Bhor.*

## I.INTRODUCTION

India (western part) is rich in plant diversity and valuable store house of medicinal plants. The curative properties of medicinal plants have been known in ancient period such as Rugveda, The origin of ethno-botany takes place in ancient period. Nomadic man observed animals eating certain plants. Plants are used as fodder or food, and used as medicine to cure wounds. During ancient period people largely depended on plant resources which were available in forests for fulfilling their day to day needs like food, fodders, shelter, clothing and medicines. The rural people or tribal people are closely associated with natural vegetation. They have developed unique system of traditional knowledge regarding utilization of plants by trial and error methods.. The first basic utility of plants is by animals and later by human beings. The concept of ethno-biology includes ethno-botany and ethno-zoology which emerged to give birth to ethno-biology. The traditional knowledge was developed by oral transmission and not by written form. The age old people from the society gave knowledge to their younger generation. Ethno-biology means study of nature and direct relationship of plants, animals and human society or the knowledge of natural environment and direct relationship between living organisms and different races of man. Ethno-medico-botanical studies in human and animal have prime importance in discovering new medicines from plants and find the valuable properties of plants utilized by primitive societies in their wild life (Schultes 1960).

Powers (1874) used the term aboriginal botany to include all the forms of vegetables world which the aboriginals used for medicine, textile, fabrics, ornamentals, etc. The term ethno-botany was first used by Harshberger (1896) and originated it with evolution of existence of human beings on this planet. between primitive man and plants. Faulks (1958) defined the term ethno-botany as total relationship between man and vegetation. Schults (1962) interpreted ethnobotany as study of inter-relationship which exists between people of primitive society and their plant environment.

Research on Ethno-botany in general and several disciplines such as gynaecology, narcotics, pharmacology, medicines, toxicology, ethnobotany of region, genera, species, tribe, etc. in particular are emerging concept in the twentieth century in India. (Maheshwari,1983). Many tribal communities in India are still practicing their Traditional Ethno-botanical Knowledge to cure a variety of diseases and ailments.Dr.S.K. Jain, Director, Botanical Survey of India in 1960 initiated ethnobotanical work in central India (Jain,1963, 1964,1965,1967; Jain & Tarafder 1963) Jain & De (1964) reported ethnobotany of Purulia district from West Bengal.

Ethno veterinary medicine deals with traditional animal health care which consist knowledge, skills, methods practices and belief about animal health care. EVM is developed by farmer in field and barren land rather than scientist in lab and clinic. EVM often provides cheaper option than western drug and the products are locally available and more easily accessible. Documentation of indigenous knowledge and evaluation of use of plants for variety of purposes. The present studies initiated with an aim in identify knowledgeable resource person that is elderly learned farmer and experienced traditional healer and document their knowledge on utilization of EVM plants in Bhor region.

In Maharashtra ethno-botanical work was initiated by Vartak and Gadgil (1980), Sharma and Malhotra (1984).In general ethno-botanical studies are important for human beings. Ethno-medico-botanical studies on Pune and adjacent areas were made by Vartak-Poona and Satara (1959), Janardhanan - Khed taluka (1963), Ved and Mehrotra (1987) reported ethnobotanical studies on Flora of Khandala. Deokule and Madgum (1992) enumerated medicinal plants from Baramati area of Pune district. Nagarkar and Ghate (2004) carried out ethno-botanical survey and commercial utilization of medicinal plant resources from Junnar Taluka of Pune district. Kamble and Kulkarni (2010) reported 18 plants used forjaundice from Bhor region in Pune district. Kamble and Kulkarni (2011) recorded 28 plants used for respiratory disorders from Bhor region.

An ethno-medico-botanical study on Maharashtra was carried out by Upadhye *et al*.(1994). Relation between tribal culture and folk medicines from Western Maharashtra was reported by Upadhye *et al*. (1999). Other regions of Maharashtra studied for medicinal plants are Kulkarni –Vengurla (1968), Malhotra & Moorthy-Chandrapur (1973), Vartak and Mandavgane-Karnala (1981), Shah *et al*. –Dahanu (1983), Sharma and Lakshiminarsimham- Nasik (1986), Upadhye *et al*.- Kolhapur (1986). Tosh (1996) enumerated 19 plants used in Western Maharashtra in ethno-medico-botanical point of view. Kothari and Moorthy (1996) and Kothari and Rao (1999) reported ethno-medicinal plants from Raigad and Thane districts. Collection of ethno-veterinary data from local or tribal people is major part of the research. Many Asia countries are known to use ethno-veterinary medicines, activity used in ethno-veterinary medicines

Traditional medicines occupy an important place among the remedies employed to treat different ailments of livestock in India. Recently, there has been worldwide an increasing interest in the research and development of ethno-veterinary pharmacology, especially on scientific validation of ethnobotanicals. A large number of native medicinal plants have been screened for various pharmacological properties, mainly to develop products for human diseases. In contrast , the application and scientific evaluation of ethno-botanicals for the control and treatment of livestock diseases has received minimal attention. The scope of ethno-pharmacolgy for enhancing the health and production of Indian livestock is very bright. (Malik et al. 1997).

Nene (2005) pointed out veterinary science and animal husbandry in ancient India. Pal (1980) recorded 29 plants for the treatment of cattle and birds among tribal communities of Eastern India. Geeta et al. (1996) enumerated 17 plant species used in ethno-veterinary medicines in Kolli Hills from Tamil Nadu. Dwarkan (2000) recorded 7 plant species for human and livestock diseases in Salem district from Tamil Nadu. Ghosh (2000) reported plant resources for lice/tick, dog bite, retention of placenta, cataract and diarrhoea from tribal areas of Bankura district west Bengal. Sikarwar (1996) recorded 35 medicinal plants used in Morena Dist.of Madhya Pradesh. household remedies used against animal and insect bitse in Bundi dist., Rajasthan. ANHRA has initiated work community based research on local knowledge systems since 1996 and six community based organizations have been trained to document local knowledge system pertaining to animal health and ethno-veterinary practices, animal nutrition, animal breeding , local production systems and markets. The outcome of the survey was that most of the farmers desired to learn more about the proper use and applications of ethno-veterinary practices as these were economically, socially and culturally more acceptable for marginalized communities (ANTHRA, 1997ab). Ghotge et al (2002) have given social approach to the validation of traditional veterinary remedies. Ravikumar et al. (2004) carried out validation of ethno-veterinary practices adopted by farmers in Dindigul district of Tamil Nadu**.** Non-experimental validation of ethnoveterinary plants and indigenous knowledge used for backyard pigs and chickens in Trinidad and Tobago by Lans, et al.(2007).

In Maharashtra and Andhra Pradesh major work carried out by ANTHRA group (Ghotge and Ramdas, 1999; Ramdas and Ghotge, 2000, Ramdas et al 2001) Kulkarni and Kumbhojkar (2002) reported 127 plants used by Mahadeo-koli tribe for ethno-veterinary practices. Ghotge and Ramdas (2008) have made sincere efforts in Maharashtra and Andhra Pradesh for documentation of plants for animal health care and data on validation of plants on local farm along with literature search in a book form.

Considering the earlier research on ethno-medico-botanical studies at International, national and regional levels has become a recognized tool in search for new sources of drugs.

## II. METHODOLOGY

### 2.1. AREA UNDER STUDY

Bhor taluka covers an area of 892.0 Sq. Km. It is situated 54 km South of Pune and between 18 º and 18º.45' N latitude and 73º -15' E. longitude. It has 185 villages and total population is 1, 54,903. The climate of the area is moist during rainy season and moderate in winter and summer season. Vegetation in the forested area includes, evergreen, moist deciduous, dry mixed deciduous and scrub types. Forest in hilly area of Western part is of evergreen type due to heavy rainfall and higher elevations of the Sahyadri main ridge (650 to 1424 m altitude). This is an undisturbed, well developed evergreen forest often showing distinct layers and a variety of habitat patterns. The southern part of Bhor taluka has moist deciduous forest along higher elevation. The dry mixed deciduous forest covers the broad western part of the area.

The main occupation of local people is agriculture. Some people collect forest products like fruits, gum, honey, medicinal plants from surrounding forest area. They have an accurate knowledge of the environment, including species and ecological relations that exist among them by their long association with nature. The livestock for each family depend upon their agricultural holdings. Generally poor farmers have one buffaloes and cows to fulfill the milk need. Two bullocks are required for agricultural practices. Very few women are interested in keeping sheep and goat. Well known herbalist are belonging to Carpenter, barber and low caste economically backward communities are giving herbal medicines to animals and human diseases.

## III. MATERIAL AND METHODS

The data on ethno-medicinal plants has been collected from field visits and personal interviews and questionnaire. The data is generated for Ph.D. work since 2004 to 2010. Villages from the study area are given in Map Local government health care facilities are not available to remote hilly areas. They are depends on herbalist to cure livestock in adverse conditions. The doses are given by herbalists based on their long experience. Most of them are illiterate and long association with nature. Their traditional knowledge is a part of their living and they never charge to plant based medicines. Juice of the plant part is prepared by crushing or pressing by addition water or without water, decoction is prepared by boiling plant part in water; Powder is prepared by drying plant part and grinding. Paste is prepared by rubbing plant part in few drops of water. Ash is prepared by burning plant parts. Some combinations was made for healing purpose like butter milk, jaggary, turmeric powder, coconut oil, castor oil, salt etc. plants are described with Botanical name, vernacular name ,plant parts used, family, distribution. Chemical composition and medicinal uses of each plant part are given. The herbalists knowledge of plant parts used for the treatment in the form of extract, juice, powder and decoction, etc. are given with appropriate administration. Specimens are deposited at AHMA (Agharkar Herbarium of Maharashtra Association) Agharkar Research Institute, G.G.Agarkar Road, and Pune-411 004. The data on ethno-medico-botany has been identified and confirmed with the help of regional flora and relevant scientific literature. The specimens were also confirmed by comparing them with authentic specimens of herbaria and regional flora.

**Map Of Bhor Taluka**

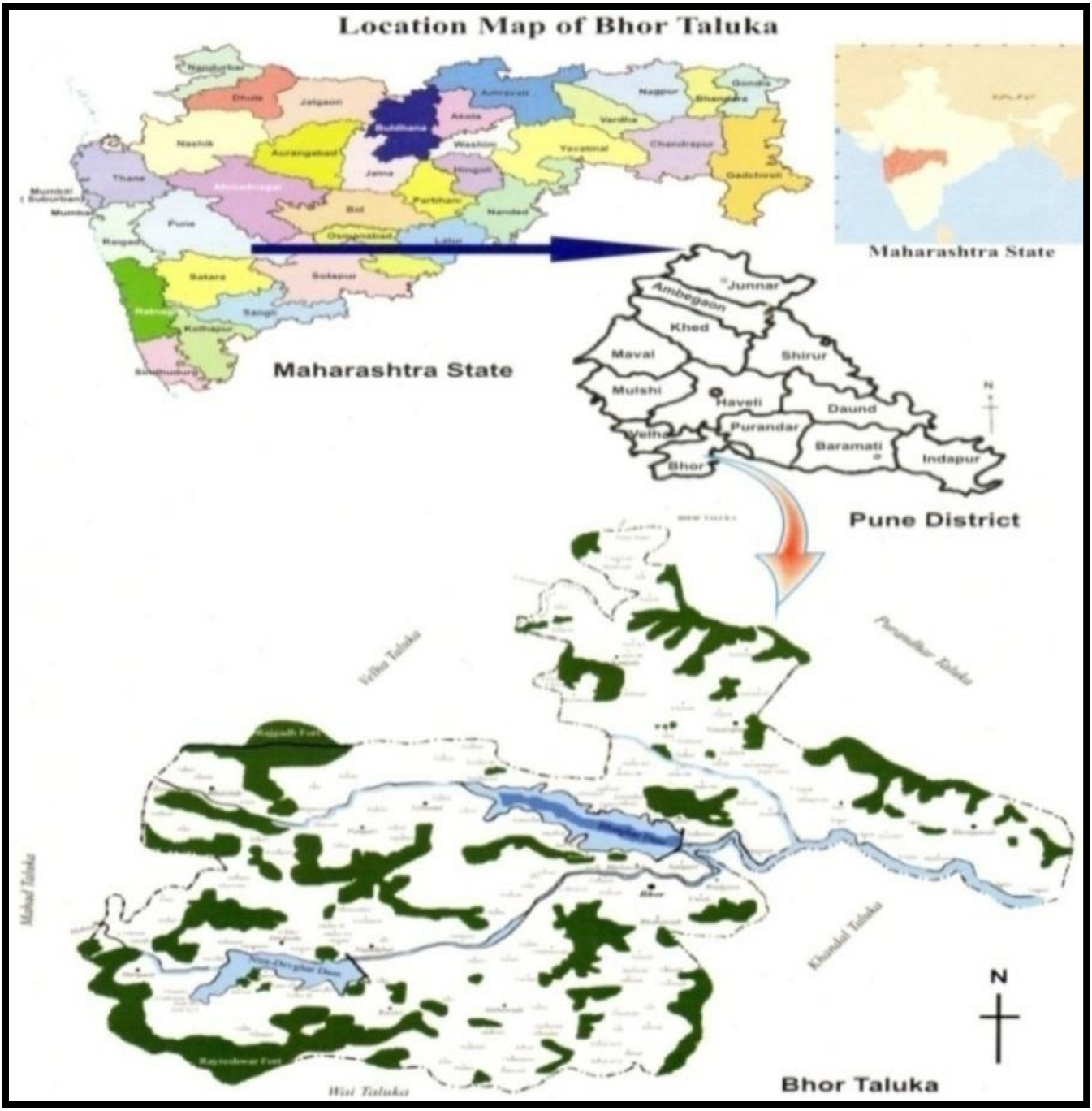

**Table-1 Ethno medicinal and Ethno veterinary plants for human & animal ailments.**

| Name of Ailments | Botanical Name | Family | Local Name | Part Used | Local Use | Administration for Human& Animal Ailments |
|---|---|---|---|---|---|---|
| Fever | *Achyranthes aspera* L. | Amaranthaceae | Aghadaa | Whole Plant | Decoction | **H**-10 to15 ml decoction along with honey is given for 3 to 4 days **A**- 30ml decoction along with jaggery is given twice a day for 3 to 4 days |
| Fever | *Echinops echinatus* Roxb. | Astereceae | Utkatari | Root | Juice | **H**-two tsp root juice is given along with 50ml water for 2 to 4 days. **A**-25 to 30gm paste along with 60ml water is given twice a day for2 to3 days |
| Fever | *Ocimum tenuiflorum* L. | Lamiaceae | Kali Tulas | Leaf | Juice | **H** -2 to 3 tsp juice along with honey is given twice a day for3to 4 days. **A**-20 to 30 ml juice is is given twice a day for 3 to 4 days. |
| Fever | *Tinospora cordifolia* (Willd) Miers | Menisprmaceae | Gulvel | Stem, Leaf | Juice | **H**- 20/25 ml decoction given twice a day for 3 to 4 days **A**- 100ml juice/ decoction is given twice a day for 3 to 4 days |
| Fever | *Vitex negundo* L. | Verbenaceae | Nirgudi | Leaf | Juice | **H**- Two tsp given twice a day for 3to 4 days **A**-30to 50 ml leaf juice are given twice a day for 2 to 3 days. |
| Fever | *Zingiber officinalis* Rosc. | Zingiberaceae | Ale | Rhizome | Juice | **H**- 2 to 3 tsp juice along with honey is given twice a day for 3to 4 days. **A**-20to 25 ml juice along with jiggery is given twice a day for 3 to 4 days |
| Dysentery and Diarrhoea | *Aegle marmelos* (L)Corr. | Rutaceae | Limbu | Fruit | Juice | **H**- 2 to 3 table spoon fruit juice along with glass of water given twice a day for 3 to 4 days. **A**-25 to 30gm fruit powder along with 3 glass of warm water is taken twice a day for 3to 5 days. |
| Dysentery & Diarrhoea | *Paraclyx Scariosus* (Roxb) Ali. | Fabaceae | Ran-ghevada | Leaf | Juice | **H**- 15 to 20ml juice along with 30ml butter milk taken twice a day for2to3 days. – A-100 ml leaf juice along with50 ml buttermilk taken -twice a day for3 to 4 days. |
| Dysentry& Diarrhoea | *Holarrhena pubensens (*Buch Ham)Wall exG.Don | Apocynaceae | Kuda | Bark | Powder | **H**- 2 to 3 tsp bark powder along with 20 ml buttermilk taken twice a day for 3 to 5 days. **A** -20 to 30 bark powder along with 100ml buttermilk given twice a day for 3to 4 days.- |
| Dysentry& Diarrhea | *Syzygium cumini* (L) Skeel | Myrtaceae | Jambul | Bark Leaf | Juice | **H**- 10 to 15ml juice with cup of water is given twice a day for3to 4 days. **A** -30 to 50 ml juice along with glass of water given twicea day for 3 to 4 days |

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|---|---|---|---|---|---|---|
| Dysentry& Diarrhea | *Mentha spicata* L. | Lamiaceae | Pudina | Leaf | Powder | **H-** 1 to 3 tsp leaf powder along with a glass of water is taken a twice a day for 2 to 3 days.<br>**A-** 25 to 30 gm powder along with two glass of water is given twice a day for 3 to 4 days. |
| Dysentry& Diarrhea | *Woodfordia fructicosa* Salisb. | Mytaceae | Dhayati | Flower | Powder | **H**-2 tea spoon powder with a glass of water is given twice a day for 4 days to control dysentery..<br>**A**-30 gm powder with two glass of water is given twice a day for 3 days. |
| Cold & Cough | *Achyranthes aspera* L. | Amaranthaceae | Aghada | Root | Juice | **H** -5 to 10 ml root juice is given twice a day for 3 to 4 days**.**<br>**A** -20/ 30 ml juice is given twice a day for 3 to 4 days. |
| Cold & Cough | *Bauhinia racemosea* Lamk. | Caesalpinaceae | Kanchan | Leaf | Juice | **H**-15 to 20 ml leaf decoction of Tulasi, Maka and Adulasa is given twice a day for 2 to 3 days.<br>**A**-30to40 ml decoction is given twice a day for 2 to3 days**.** |
| Cold & Cough | *Adathoda vasica* Nees | Acanthaceae | Adulasa | Leaf flower | Paste | **H-** 2 to 3 tablespoon paste along with honey is given twice a day for2 to 3 days.<br>**A**-20 to 25 gm leaf paste along with 100 ml warm water Is given twice a day twice a day for 2 to 3 days. |
| Cold& Cough | *Calotropis procera* (Ait)R.Br. | Ascipidaceae | Rui | Flower | Powder | **H-** 2 table spoon flower powder with honey is given twice a day for 3to 4 days.<br>**A** -25 o 30 gm flower powder with jaggery is given twice a day for 3 days. |
| Cold & Cough | *Cassia fistula* **L.f** | Caesalpinaceae | **B**ahva | Leaf flower | Paste | H-2 /3 table spoon paste along with honey is given twice aday for 2 to 3 days.<br>A-20 25 gm paste with 100 ml warm water is given twice a day for 3 days. |
| Cold & Cough | *Mentha spicata* L | Lamiaceae | Pudina | Leaf | Juice | **H-** 2 tablespoon juice with honey is given twice a day for 3 days<br>**A-**20/ 30 ml juice with 25 gm jiggery is given twice a day for 3 days . |
| Eye diseases | *Allium cepa* L | Liliaceae | Kanda | Bulb | Juice | **H-** 5 /6 juice drops are dropped in an eye twice a day for 3 /4 days<br>**A-** 10 /15-drops are dropped in an eye for 3 days. |

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|---|---|---|---|---|---|---|
| Eye diseases | *Emblica officinalis* Gaertn | Euphobiaceae | Avala | Fruit- | Juice | **H-** 3/ 5 drops of fresh fruit juice is applied twice a day for 3/ 4 days**.** **A-**10/15 drops of fruit juice is applied in eyes twice a day for 3 /4 days. |
| Eye diseases | *Lobelia nicotianefolia* Roth ex R$S | Lobelionaceae | Dhavali | Root | Water | **H-** 5 /6 drops of Clean fresh root water dropped in an eyes twice a day for 3 /4 days. **A-**10/12 drops of root juice is dropped in an eyes twice for 3/ 4 days. |
| Eye diseases | *Lecus stelligera* Wall ex Benth | Lamiaceae | Burambi | Leaf | Juice | **H-**5 /6 leaf juice drops is dropped in an eyes twice a day for 3 /4 days. **A-** 10 /12 leaf juice drops is dropped in an eyes for 3 /4 days. |
| Eye diseases | *Moringa oleifera* Lam | Moringinaceae | Shevga | Leaf | juice | **H-**5 /6 drops of juice are dropped in eye twice a day for 2 / 3 days. **A-**15 ml juice dropped in eye for 3 days. |
| Eye diseases | *Santalum album* L | Santalaceae | Chandan | Leaf | Juice | **H-** 3 /5 drops of leaf juice is dropped in eye twice a day for 3 days. **A-**10 /12 drops of juice is applied in eyes twice a day for4days. |
| Wound Healing | *Azardichta Indica* Juss. | Meliaceae | Kadunimb | Leaf | Powder | **H-**Leaf powder is applied on fresh wound till cure. **A-**Leaf powder / juice is applied on wound twice a day for 6 /7 days. |
| Wound Healing | *Clematis gouriana*Roxb ex DC | Ranunculaceae | Morvel | Leaf | Juice Powder | **H-**Leaf juice / powder is applied on cut wound once a day for7 days. **A-**leaf juice /powder is applied on fresh wound once a day for 6/ 7 days. |
| Wound Healing | *Colebrookia oppositifolia* J.E.Smith. | Lamiaceae | Bahman | Leaf | Juice/ Powder | **H-**Leaf juice / powder is applied on wound once a day for 5 /6 days. **A-** Leaf juice / powder is applied on wound once a day for 6 /7days. |
| Wound Healing | *Tagatus erecta* L | Asteraceae | Zendu | Leaf | Juice/ powder | **H-** Leaf juice / powder is applied on wound for 6 /7 days. **A-** Leaf juice / powder is applied on wound for 6 /7 days. |
| Wound Healing | *Tridex procubens* L | Asteraceae | Ekdandi | Leaf | Juice / powder | **H--** Leaf juice / powder is applied on wound for 6 /7 days .A- Leaf juice / powder is applied on wound for 6 /7 days. |

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|---|---|---|---|---|---|---|
| Wound Healing | *Pogostemon parviflorus* (Burm.f) O.Ktze | Lamiaceae | Phangali | Leaf | Juice /powder | **H**- Leaf powder / juice is applied on wound for 6 /7 days. **A**- Leaf juice / powder is applied on wound for 6 /7 days. |

**Lf**- Leaf ,**Rt** -Root, **Ft**-Fruit, **Bu**-Bulb, **Fl**-Flower, **Bk**-Bark, **Rh**-Rhizome, **St**- Stem-, **WP**-Whole plant

## IV. RESULT AND DISCUSSION:

The present paper revealed the documentation of the ethno medicinal and ethno veterinary data from hilly and remote area of Bhor taluka. Various local people like -Dhangar, Kunabi, Mahadeo-koli, Katkari, Carpenter Blacksmith, Goldsmith, Barber and Bhoi are found to be used herbal drugs for curing human and animal diseases from Bhor region. Total.**30** plant species were reported from Bhor which belonging to **28** genera and 22 families and used to treat five common ailments of human and such as **cold &cough**,, **Eye disease**, **fever**, **wound healing** and **dysentery** and **diarrhea** of human and livestock. The above data collected from15 villages and 20 informants from Bhor region. Most of the plant species are wild and few species are in cultivation in kitchen gardens. Herbal medicine are used were recorded and used to treat five commonly occurred ailments such as Cold &cough, Eye diseases, Fever, Wound healing in different form such as pastes juice decoctions extract and ,powder. The dominant plant part used are leaf(19) followed flower (4), root (3), bark (2), fruit (2), stem ,whole plant rhizome and bulb one species Most of the plant species are herbs(14) followed by trees(7), shrub(5), and climbers(3) used to treat only one disease. Some plant species used to treat many diseases (multipurpose value) 30 medicinal plant species are used to cure five common diseases of human and animals. Total **30** plant resources are found to be used in different formulations such as decoctions, paste, powders, juice, fumigations for human health care & animals health care.

## V.CONCLUSION

The main aim of present paper was the documentation of ethnomedicinal and ethnoveterinary data on 2004 to 2010 from hilly and remote area of Bhor region for traditional medicinal plants treatments of human and livestock. The data collected from vaidu, local practitioners, medicine men, herbalists, Mukhiya, traditional knowledgeable person .The data collected for commonly used medicinal plants for treatment of human and livestock diseases. The commonly used diseases are cold & cough, fever, woundhealing, dysentery & diarrhea and eye diseases. The 6 medicinal Plant species was used for each diseases. one plant used for single disease but sometimes single plant used for treatment of many diseases or used as multipurpose value. The medicinal plants data collected from Bhor area .It may be urgently need to be analysis of its chemical, scientific, clinical and pharmaceutical trial for formation of new herbal medicine for future use in curing human and animals diseases from Bhor Region. There is urgent need to analyses of medicinal plants for chemical scientific, clinical and pharmaceutical trial for formation of new herbal medicine for future use in this hilly and remote area of Bhor Region. Maintenance of germplasm of medicinal plants is required for cultivation and conservation of traditional knowledge. Cultivation of medicinal plants on wasteland or hilly region will enhance tribal economy in present study herbalists conserve **30** medicinal plants for proper utilization. Some of them are cultivate in their kitchen garden Present work is the first hand information regarding exploration of traditional knowledge for ethno-medico-botanical studies of Bhor region .

## VI. REFERENCES


1. Deokule, S. S. and Madgum, D. K. (1992) Enumeration of medicinal plants from Baramati area, district Pune, Maharashtra. *J.Econ.Tax.Bot. 10Addl. Ser.*,: 289-299.
2. Faulks, P.J. (1958) *An introduction to Ethnobotany* .Moredale publication Ltd. London.
3. Harshberger, J.W. (1896) The purpose of Ethnobotany. *Bot. Gaz*. 21: 146-158.
4. Jain, S.K. and Tarafder C.R. (1963) Native plant remedies for snake-bite among Adibasis of Central India.*Indian Med. J*. 57 :307-309.
5. Jain, S.K. and J.N. De, (1964) Some less known plant foods among the tribals of Purulia (West Bengal). *Sci. Cult*., 30: 285-286.
6. Jain, S.K. (1963) Plants used in medicine by the tribals of Madhya Pradesh.*Bull. Reg. Res. Lab. Jammu* 1:126-128.
7. Jain, S.K. (1964) Wild plant foods of the tribals of Bastar (Madhya Pradesh) *Proc. Nat. Inst. Sci. India*30B(2): 56-80.
8. Jain, S.K. (1965) Medicinal plant lore of the tribals of Baster.*Econ. Bot*. 19:236-250.
9. Jain, S.K. (1967) Plants in Indian medicine and folk lore associated with healing of bones. *Indian J. Orthopaedices* 1: 95-104.
10. Janardhanan, K.P. (1963) An enumeration of the medicinal plants of Khed taluka, Maharashtra State. *Bull.Bot.Surv.India*, 5: 363-374.

11. Kamble, P.B. and Kulkarni, D.K. (2011) Commonly used plants for ethno-veterinary medicines from Bhor region of Pune district, Maharashtra. In *proceeding International Conference on Traditional Practices in Conservation Agriculture*. Pub.,Choudhary, S.L., Khandelwal , S.K. and Nene, Y.L. JRN Rajasthan Vidyapeeth University, Udaipur, Rajasthan, India.: pp. 206. (Abstract).
12. Kamble, P.B. andKulkarni, D.K. (2011)Ethno-medicinal plants used for respiratory disorders in Bhor region of Maharashtra. *Asian Agri-History* 15(2):161-168.
13. Kamble, P.B. andKulkarni, D.K.**(**2010) Development and improvement in ethno-biology teaching in rural environment. Proceedings of the UGC Sponsored *National Conference on Taxonomy Teaching and Research : The relevance in the National Context*. Sept. 2008 at Department of Biology, Shri R.K. Parikh Arts and Science College, Petlad, Gujarat **:**An International Journal of Bioscience Reporter. 8(1) supplement : 75-79**.**
14. Kamble, P.B. andKulkarni, D.K..(2010) Medicinal plants traditionally used in jaundice from Bhor region, Pune district. *Geobios*. 37(1) 9-12.
15. Kulkarni,B.G. (1968). Medicinal plants from Vengurla, Sawantwadi, Phonda area, Ratnagari District, Maharashtra State. *M.V.M. Patrika* 3: 17-24.
16. Kothari, M.J. and Moorthy, S. (1996) Ethnobotany in human welfare of Raigad district in Maharashtra State,India. In *Ethnobiology in Human welfare* (Ed. S.K.Jain) Deep Publications, New Delhi.:403-407.
17. Kothari, M.J. and Rao, K.M. (1999) Ethnobotanical studies of Thane district, Maharashtra, *J.Econ.Tax.Bot.*, 23(2): 265-272.
18. Maheshwari, J.K. (1983) Development in Ethnobotany. *J. Econ. Tax. Bot*., 4:1-5.
19. Maheshwari, J.K. (Ed.) (1996) ,*Ethnobotany of South Asia*. Scientific Publisher, Jodhpur.
20. Malhotra S.K. & Moorthy, S (1973) Some useful medicinal plants of Chandrapur district, Maharashtra State. *Bull. Bot.Surv.India*., 15: 13-21.
21. Nagarkar, S. and Ghate,V.( 2004) Ethnobotanical and commercial utilization of medicinal plant resources from Junnar Taluka, Dist. Pune.In *Focus on sacred groves and ethnobotany* (Eds Ghate, V.S. Sane, H. and Ranade, S.S.) Publishers Prism Publication, Mumbai. pp. 202-207.
22. Shah, G.L. Yadav, S.S. and Badrinath, V. (1983) Medicinal plants from Dahanu forest division in Maharashtra State. *J. Econ.Tax. Bot*,. 4: 141-151.
23. Sharma, B. D. and Malhotra, S.K. (1984) A contribution to the ethnobotany of tribal areas in Maharashtra.*J.Econ.Tax.Bot.*, 5: 533-537.
24. Sharma, B.D. & P. Lakshminarasimhan (1986) Ethnobotanical studies on the tribals of Nasik District (Maharashtra) *J. Econ.Tax. Bot*., 8(7): 439-454.
25. Schultes, R.E. (1960) Tapping our heritage of ethno-botanical lore. *Econ. Bot*. 14(4): 254-262.
26. Schultes, R.E. (1962) The role of the ethnobotanist in the search for new medicinal plants. *Lloydia* 25(4); 257-266.
27. Tosh, J. (1996) Ethno-botanical study of Western Maharashtra.*J.* Econ Tax Bot Addl Ser 12: 169–174.
28. Upadhye ,A.S. Kumbhojkar, M.S. and Vartak, V.D. (1986) Observation on wild plants used in folk medicine in rural areas of Kolhapur district. *Ancient Sci. of Life*, 6(2): 119-121.
29. Upadhye, A.S. ,Vartak, V.D. and Kumbhojkar M.S. (1994) Ethno-medico-botanical studies in Western Maharashtra, India. *Ethnobotany*, 6(1-2):25-31.
30. Upadhye, A.S. and Kumbhojkar M.S. (1999) Ethnobotany of genus Sterculia L. from India. *J. Econ. Tax. Bot. add. Ser*.12 : 40-42.
31. Vartak, V.D. (1959) Medicinal plnts from the hilly regions, Poona and Satara district, Bombay State.*Ayurvedic Coll. Mag*.,.22 : 455-458.
32. Vartak, V.D. and Mandavgane, R. (1981) Enumeration of medicinal plants from Karnala tribal area, Kolaba district, Maharashtra State. *J. Univ. Poona Sci. & Tech.*, 54: 91-99.
33. Vartak,V.D. and Gadgil, M. (1980) Studies in ethnobotany- a new vista in botanical science. *Biovigyanam* ,6: 151-156.
34. Ved Prakash and Mehrotra, B.N. (1987) Ethnobotanical studies on the flora of Khandala, Maharashtra State. *J.Econ. Tax. Bot.*, 9(1) : 205-208.