

Traditional Ethnoveterinary Practices, Medicinal Plants from Satpuda Forest, East Khandesh, Maharashtra, India

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Abstract: East Khandesh area of Satpuda forest falls in northern part of Jalgaon district of Maharashtra state of India. It is situated between 20° - 17' and 21° -21' North latitude & 74°- 47', & 76°-28' East longitude. The vegetation composed of humid & many semi-evergreen species apart from dry deciduous ones. Tribals are the inhabitants of the area with the several tribes like Pawara; Barela & Bhills. Traditionally medicinal plants are much in use. Attempt has been made to collect information about ethnoveterinary medicinal plants from tribals of the area. Present study is based on field survey of personal discussion with local village health practitioners (LVHP), & literature survey from, June 2007-2009. Present paper deals with some of 33 plant species of belonging to 24 families, 30 genera & 32 species with their local name, botanical name, family, plant part used, ethnoveterinary uses, distribution, & their threat status preparation of remedies & disease treated.

Keywords: Ethnoveterinary, Satpuda, East Khandesh, Medicinal plants, Pawara.

1. Introduction

Forests are the sources of invaluable medicinal plant wealth since time immemorial. Tribal men's realize the preventive and curative properties of plants and started healthcare system. India's traditional systems of medicine are the part of cultures that attracted the attention of peoples today. Medicinal plants in meetings family's primary healthcare and nutritional needs are traditional which is found popular in all cultures [1],[2]. These medicinal plants provide alternative green health and number of ecofriendly domestic and industrial usage Bagul & Yadav [3], [4], [7], [8], [9]. These remedies based on herbal medicines often have negligible side effects and due to relatively unaffordable cost of synthetic drugs, traditional medicines now become an affordable choice for the poor people in these areas. Although considerable work has been done on floristic and ethnobotany of various regions and tribes of Maharashtra state Billore et al 1998[10], Borins 1976[11], P.O Bodding 1925, [12], A.J. Godbole, 1984. [15]. Janardhan KP.1963, [20] Khare2004, [25] N.S.Anderson et al, 2008[27], A.H. Rajasab 2004, [28] Rajith et al, 2012[29]. Semwal et al., 2010. [30] Tewary 1980[32] R.M.Bagul et al 2006, 2007[5]&[6].

Ecological & Vegetational studies of satpuda forest mountains have been carried out by C.K.Karnik 1935, [21] T.S. Mahabale 1959, [26]. Similarly large no of ethnobotanical studies have been documented by people of different areas Duke 1996, [14] WHO 2002, [33] Hafiz et al 2014, [16].

Forest provides diverse habitat for natural resources including plant diversity being ethnobotanically important. As far as studies on ethnoveterinary medicinal plants of east khandesh concern there are no reports so far Pawara and Barela are the tribes predominantly located in the east west Khandesh of Maharashtra. Burhanpur district of Madhya Pradesh, Belgaum district of Karnataka, and Surat district of Gujarat make the boundaries. River Tapi, Girna and Purna

flows along with the middle of the district covers major forest area in which Pawara & Barela primarily depends upon medicinal plants of their surrounding area for the treatment of their ailments. Living in the forest these tribal communities acquired knowledge about these wild flora and fauna. After years of practice, observations and analysis by trial and error methods the innovative members of these communities have selected useful and harmful members of the surrounding forest vegetation. The study aims to prepare an inventory of medicinal plants species used by these tribal peoples to cure various diseases.

1.1. Study area

a) Topography

The study covers the areas of Satpuda region "Jalgaon district situated between 20°-17' and 21°-26' North latitude and 74°-47' and 76°-28' East longitude. Satpuda mountain ranges from the northern boundary Ajanta and Satmala ranges from roughly the southern boundary. Northern is border of Madhya Pradesh, whereas it shares the border areas in eastern Buldhana, Southern Aurangabad and Nasik and Western Dhulia district. The forest area to the north of Tapi River which covers the entire Satpuda of east Khandesh runs east west towards west Khandesh of Dhule and Nandurbar district.

b) Configuration of the ground

The area falls in the Deccan plateau. The area is variable in topographical features and in landscape. Three regions of the Jalgaon district on basis of topography can be distinguished, namely -1. The rich Tapi valley in the centre, 2. The high mountainous range of Satpuda on north and 3. Barren ridges of Satmala and Ajanta ranges on the south. Study is mainly confined to the first two regions only and more specific to Satpuda mountainous ranges. The Satpuda form a broad belt of mountain ranges on the north of Tapi river. The Central crust is about 610 meters high. The highest peak 'Panch Pandu' in Yawal Taluka is 1072 mtrs.

c) Geology & Soil

The entire area is of Deccan traps except a few strips of alluvial along river tributaries touches the foot hills of Satpuda. The Deccan traps are the result of out pouring of enormous lava flows which spread over vast areas of western, central and southern India in continuation at the end of Mesozoic era. There are long narrow fissures and cracks in the north east and spread almost horizontal shoots. These are called plateau basalt. The lavas are generally horizontal in deposition but at places they dip at some places. In Aner valley and near Dalvot north of Chopda they appear to be horizontal but they dip at some areas stretching upto Raver. The traps are mostly compact and harder in color. These traps are mostly dark grey to brownish. The amygdoidal variety is greenish to purple and softer in the slopes of the valleys. Also, secondary minerals like quartz, chalcedony arato, Jasper, rock crystals, xoolitos and calitos are found. The most of hilly regions near Tapi valley are of basalt. The soil is produced by erosion and weathering are deep brown to red or black (regur). Alluvial soil is found around the river Tapi. The black soil is rich in plant nutrients and good for cotton cultivation. Latorite soil is reddish brown, porous, found in patches hilly regions.

d) Climate

The climate of the area is generally dry except in monsoon. The rainy season starts in the month of Pradesh, whereas it shares the border areas in eastern Buldhana, Southern Aurangabad and Nasik and Western Dhulia district. The forest area to the north of Tapi River which covers the entire Satpuda of east Khandesh runs east west towards west Khandesh of Dhule and Nandurbar district. June and there are post monsoons at the end of Oct. and winter begins from December and ends with February. Summer is very hot and begins from March and ends in May. The hottest month is usually May.

e) Rainfall

Jalgaon District receives an average rainfall of about 750 mm. In which Yawal-731.70, Jalgaon-725.10, Chopda-718.70, Raver-708.20, Muktainagar -664.10 mm which falls in the areas of Satpuda forest ranges.

f) Temperature

December and January are the coldest months of the year with the mean daily minimum temperature 8.2°C and the mean daily maximum at 24°C. Cold waves from northern India may also affect the temperature of the area and it may dip up to 2°C. Temperature rises gradually from the month of March and in the month of May it is highest. The mean daily maximum temperature recorded in summer is about 40°C and the highest recorded in Jalgaon up to 46°C. The lowest mean daily minimum is up to 38°C.

Forests

The forest types of Satpuda ranges are generally Tropical dry deciduous as classified by Champion and Seth (1968). Considerable variation in the composition of forests are noted from east to west of Satpuda ranges. This may be due to the nature of soil, topography, and climatic factors. The western and northern slopes or valleys are rich in the flora. Soil plays the important role in the constituents of floral composition. The alluvial soil provides good growth to the

tree species. Entire area is under much biotic interference which affects the growth as well as the composition of forests also. The forests types are mainly of 4 types:

1] Dry Teak Forests

These are confined to the plain areas and down foot hills of Satpuda ranges in Chopda and Yawal talukas. The main association of *Tectona grandis* is *Boswellia serrata*, *Acacia chundra*, *Anogeissu latifolia*, *Hardwickia binnata*, *Embllica officinalis*, *Garuga pinnata*, *Diospyros melanoxylon*, *Lagerstromia parviflora*, *Terminalia crenulata*, *Bombax cieba*, *Sterculia urens*, *Buchanania cochinchinensis*, *Butea monosperma*, *Dolichandrone falcata*, *Ziziphus mauritiana*. The shrubby species are *Cassia auriculata*, *Carissa congesta*, *Lantana camera*, the grasses are *Heteropogon contortus*, *Cymbopogon martini*, *Apluda triandra*, and *Themeda quadrivalvis*. Stratification point of view on hilly region the general floristic composition is *Tectona grandis* as the most dominant species associated with *Terminalia crenulata*, *Boswellia serrata*, *Pterocarpus marsupium*, *Grewia tiliifolia*, *Ougeinia oogenensis*, *Lagerstromia parviflora*, *Mitragyna parvifolia*, *Bombax cieba*, *Diospyros melanoxylon*, *Schleichera oleosa*, *Pachuca longifolia*, *Dalbergia paniculata*, *Soymda febrifuga*, *Ficus racemosa*, *Sterculia urens*, *Erythrina indica*, *Terminalia arjuna*, *Terminalia bellirica*, *Embllica officinalis* at the ground story. The second story consists of *Acacia chundra*, *Buchanania cochinchinensis*, *Lannea coromandelica*, *Ziziphus mauritiana*, *Bridelia retusa*, *Butea monosperma*, *Cassia fistula*, *Bambusa arundinacea*, shrubby species are *Helecteris isora*, *Cassia auriculata*, *Vitex negundo* in nallahs, *Capparis sepiaria* etc.

2] Southern dry mixed deciduous forests

This type of forest is confined to the areas around Tapi and Aner valleys of Chopda taluka and Raver and Yawal Talukas. The tract is hilly and sloppy. The vegetation is of poor quality. The area is under much grazing stress and biotic interference. The composition of flora is mainly *Anogeissus latifolia*, *Acacia chundra*, *Boswellia serrata*, *Tectona grandis*, *Hardwickia binnata*, *Lannea coromandelica*, *Azadirachta indica*, *Dalbergia paniculata*, *Strychnos portatum*, *Butea monosperma*, *Ziziphus mauritiana*, the shrubby species are *Vitex negundo*, *Carissa congesta*, Status (medicine man, nurse, doctor), Forest type where plant was found & its availability in nature (Common, Frequent, Rare, Occasional etc), Plant part used to treat part used, Mode of administration (oral, external) & dosages given with, & How many times & days the drugs prepared roughly given (glassful, teaspoonful, paste.).a, *Capparis sepiaria*, Herbaceous species are *Cassia tora*, *Heteropogon contortus*, *Aristida ciliata*, *Lapidagathis trinervosa*.

3] Scrub forests

Scrubby forests are common all along the Tapi river in Aner, Yawal and Chopda area. Heavy grazing and illicit cutting of trees are common factors of deterioration of forest. The general floristic composition is *Acacia chundra*, *Boswellia serrata*, *Anogeissus latifolia*, *Lannea coromandelica*, *Ziziphus manritiana*, *Dolichondrone falcata*, *Hardwickia binnata*, *Albizia amara*.

4] Anjan forests

These types of forests are confined to Mohomandali range, Pal range, Haripura range and also in some patches of Chopda and Yawal ranges. The composition of Anjan forest is mainly dominated by *Hardwickia binnata*, and other associated species are *Anogeissus latifolia*, *Albizia amara*, *Boswellia serrata*, *Acacia chundra*, *Bridelia reticulata*, *Diospyros melanoxylon*, *Strychnos portatum*, *Buchanania cochinchinensis*, *Butea monosperma*, *Terminalia crenulata*, *Terminalia bellirica*, *Dalbergia paniculata*, *D. latifolia*, *Balanites aegyptiaca*, *Acacia leucophloea*, *Nyctanthes arbor-tristis*, *Vitex negundo*.

Wild life

In past the area was considered to be rich in Wild life. But due to heavy poaching practices and quick transport facilities the wild life is reduced to meager in recent times. The main animals recorded by forest department in last 5 years are : Pantherwagh- *Panthera tigris*, Bibla - *Panthera pardus*, Wild cat - *Felis chaus*, Jackal - *Canis aurous*, Hyaena (Taras) - *Hyaena hysena*, Barking deer (Baker) - *Muntiacus muntjak*, Sambar-Corvus *unicolor*, Blue bull (Nilgai) - *Boselaphus tragocamelus*, common here (Sasa) - *Lopus nigricollis*. The birds found in the area are: painted partridge, grey partridge, Jungal bush quail, Grey jungle fowl, Grey pheasant, vulture, shrike, sparrow hawk, Indian search.

2. Methodology

Extensive and intensive ethnobotanical surveys were conducted in different tribal region localities of Jalgaon district from June 2006- July 2009. Then interview method was adopted for gathering Knowledge of tribal's, Local medicinemen (Bhagats, Witch doctors, and maharaj) and mouth to mouth discussion about therapeutic uses of local plants in the treatment of various diseases was noted carefully. Voucher specimens were collected from the field. The collected specimens were identified correctly by using Flora and other pertinent literature (Kirtikar and Basu 1935[22]; Karnik 1961[23]. Mahabale and Karnik 1959 [24]; Cook 1958[13]; Hooker JD 1872-1897[17]; Singh et al. 2001[31]. The herbarium prepared by standard method, Jain and Rao [18] has been deposited in the department of botany, Arts, Science and com, college, Chopda. Simple Questionnaire [19] used for data collection is like Occurrence of Plant, Respondents age, sex & education, Community Status (medicine man, nurse, doctor), Forest type where plant was found & its availability in nature (Common, Frequent, Rare, Occasional etc), Plant part used to treat part used, Mode of administration (oral, external) & dosages given with, & How many times & days the drugs prepared roughly given (glassful, teaspoonful, paste.).

3. Results

1. Cassia fistula L.

Local name: Amaltas/Bauha

Family: Caesalpinaceae

Plant part used: Fruit

Ethnoveterinary Uses: 100 gm Ghee obtained from cow milk is applied on fruit and warm gently on flame and

thereafter it is applied frequently on cold affected swollen throat of cattle for seven days till cure.

Distribution: Throughout in deciduous forest, RMB 391, Raver.

Threat Status: Vulnerable

2. Rivea hypocrateriformis (Desr.) Choisy

Local name: Phangvel

Family: Convolvulaceae

Plant part used: Leaf

Ethnoveterinary Uses: The leaves and young shoots are mixed with fodder in 1:4 proportions & used to obtain thick milk. milk

Distribution: Common on forest trees and hedges, RMB 433, Haripura forest.

Threat Status: Vulnerable

Critical Note: The leaves and young shoots are eaten as vegetable. (Garud, 1998).

3. Nyctanthes arbor-tristis L.

Local name: Parijak

Family: Oleaceae

Plant part used: Leaf

Ethnoveterinary Uses: Fever: 200-300 gm of leaves crushed into water to obtain leaf juice approximately 1 liter of extracted leaf juice boiled with 20 gm of *piper nigrum* seed powder to make final volume ½ liter. After cooling the decoction filtered with muslin cloth & 100 ml filtrate is given orally to cure fever twice a day for three days. Paste is made into water from 100 gm of stem bark pounded with pericarp of two *Terminalia chebula* fruits and applied externally on bone fracture.

Distribution: Wild at Malapur. RMB 221, Malapur.

Threat Status: Least concerned

4. Erythrina variegata L.

Local name: Pangara

Family: Fabaceae

Plant part used: Leaf & Stem bark

Ethnoveterinary Uses: Yoke sore: Near about 500 gm of leaves are made into paste with water and applied orally for cattels. externally on neck to cure yoke sore. Bark is burnt and ash applied with coconut oil on the cattles neck in pain & swellings.

Distribution: Occasionally found in Malapur forest, RMB 208, Malapur.

Threat Status: Vulnerable

Critical Note: Hot leaves useful for Arthritis (Salunkhe, 1995).

5. Hardwickia binata Roxb.

Local name : Anjan

Family: Caesalpinaceae

Plant part used: Leaf

Ethnoveterinary Uses: Lactation in Cattles: Leaves are added with fodder given for improving milk quality of milk production in cattles.

Distribution: Common in patches in forest, RMB 20, Chaogaon.

Threat Status: Vulnerable

6. *Bauhinia racemosa* Lam.

Local name : Apta

Family: Ceasalpiniaceae

Plant part used: Stem bark

Ethnoveterinary Uses: 100-200 gm of Fresh bark crushed into water and mixed with fodder for dysentery of cattle's. the relief on mouth problems.

Distribution: Throughout in deciduous scrub forests, RMB 208, Dhavali.

Threat Status: Not Endangered

7. *Clerodendrum multiflorum* (Burm f.) O. Ktze

Local name : Arni

Family: Verbinaceae

Plant part used: Leaf / Stem

Ethnoveterinary Uses

Knee problems: The gap between knee bones and cartilage and knee pain and swelling is treated by messaging the extract prepared from the leaf mixture of 'Arni pala', (*cleodendron*), 'Nirgudi' (*Vitex negundo*) & 'Erandi' (*Ricinus communis*) for one month

Rheumatism: Leaves crushed and applied on rheumatic parts of the body of animals.

Distribution: Throughout on hedges in plains, RMB 334, Chunchale

Threat Status: Not Endangered

8. *Melia azedarach* L.

Local name : Neem

Family: Meliaceae

Plant part used: Leaf

Ethnoveterinary Uses

Worm infections: 100gm of leaves are made into paste by adding 2-3- root pieces of curcuma longa and given orally for worm infections daily twice up to seven days.

Distribution: Wild in forest, RMB 218, Anturli.

Threat Status: Not Endangered

9. *Diospyros melanoxylon* Roxb.

Local name : Tembhurni

Family: Ebenaceae

Plant part used: Fruits

Ethnoveterinary Uses

Blood Toxicity: Fruit Juice extracted and 2-3 Teaspoonful given twice daily for one month for the purification of blood. Ripen 10-20 Fruits pulp(Pericarp) mixed with glassful of water is used as lotion to cure eye diseases in cattle.

Distribution: Throughout, frequent in deciduous forests; RMB-101.Malapur.

Threat Status: Not critically endangered

Critical Note: Fruits are edible.

10. *Euphorbia tirucalli* L.

Local name : Thor/sher

Family: Euphorbiaceae

Plant part used: Stem

Ethnoveterinary Uses: The latex of the whole plant is used externally as an antidote for snake bite and scorpion sting.

Distribution: Throughout naturally on waste lands. RMB 507, Karjane.

Threat Status: Not Endangered

11. *Ougeinia oojeinensis* (Roxb.) Hachreut

Local name : Tiwas

Family: Fabaceae

Plant part used: Leaf

Ethnoveterinary Uses: Leaf paste is made into water and used on wound healing.

Distribution: In deciduous forest of Devhari not common. RMB 329, Devhari.

Threat Status: Vulnerable

12. *Cassia tora* L.

Local name : Tarota

Family: Ceasalpiniaceae

Plant part used: Leaf

Ethnoveterinary Uses: Yoke sore: Near about 100 gm of leaves are made into paste with water and applied frequently on cold affected swollen throat for cattle

Distribution: Throughout common, RMB 140, Vardi.

Threat Status: Not Endangered

Critical Note: Tewary et.al, (1982) reported the use of leaves in Stomachache and seeds in leprosy.

13. *Aegle marmelos* (L.) Corr.

Local name : Bel

Family: Rutaceae

Plant part used: Fruits/Leaf

Ethnoveterinary uses :

Dyspepsia – 100-200 gm of leaves crushed with same amount of cymbopogon leaves & 2-3 pieces of curcuma roots, Paste obtain is fed to cattle twice daily till cured

Distribution: Throughout in deciduous forests and scrub forests, RMB 514, Dhanora.

Threat Status: Vulnerable

14. *Citrulus colocynthis* (L.) Schrad

Local name : Indrayan

Family: Cucurbitaceae

Plant part used: Seeds

Ethnoveterinary Uses:

Dysentery : Seeds are crushed into water to obtain juice & a cup of filtered fruit juice is given three times a day on dysentery.

Distribution: Occasional, found in forest undergrowths, Satpuda, RMB373, Deogiri.

Threat Status: Threatened

15. *Holoptelia integrifolia* (Roxb.) Planch

Local name : papda/sitapali

Family: Ulmaceae

Plant part used: Seeds

Ethnoveterinary Uses: Seed paste is used for killing rats

Distribution: Frequent, RMB 318, Melane
Threat Status: Vulnerable

16. Leucas cephalotes (Roth) Spr.

Local name : Khetrao
Family: Lamiaceae
Plant part used: Whole plant
Ethnoveterinary Uses:
Eczema and itching of skin: Paste of the whole plant is made with water & applied externally in skin diseases
Fresh or dried whole plant & 15-20 fruits of *piper nigrum* are made into paste with water & applied orally as antidote for snakebite for cattle
Distribution: On rocky lands in Chaogaon forest, RMB 186, Chaogaon.
Threat Status: Not Endangered

17. Terminalia arjuna (Roxb.ex DC.) W & A.

Local name : Arjun sadada
Family: Combrataceae
Plant part used: Stem bark
Ethnoveterinary Uses:
Suppression of waist :
500 gm of leaves crushed in one liter water & given glassful of juice orally twice a day till cured. juice. Fourth part (250 ml) of this is given orally twice a day to cure for suppression of waist after delivery in cows
Distribution: Occasional in dry deciduous forests, RMB 416, Pal.
Threat Status: Threatened

18. Pueraria tuberosa (Roxb.ex willd.) DC.

Local name : Bhuikuda
Family: Fabaceae
Plant part used: Root
Ethnoveterinary Uses:
Galactagogue:
Dried roots powdered. 50 gm approx powder is with honey in equal proportion & given daily twice for a week on galactagogue in cows.
Distribution: Rare in forest, RMB 109, Deogarh.
Threat Status: Endangered
Critical Note: It is very effective medicine for the treatment of female Sterility and given in the condition when cow fails to conceive.

19. Vitex negundo L.

Local name : Nirgudhi
Family: Vitaceae
Plant part used: Leaf
Ethnoveterinary Uses: Internal ulcers and external Swellings: Fresh 100 gm approx of leaves mixed with 01-20 cardamom fruits are made into juice with 1 liter warm water. 100ml given twice a day orally till cure
Distribution: In river beds and waste places of forest, RMB 224, Manudevi.
Threat Status: Vulnerable

20. Madhuca longifolia (Koen.) Mac. Bride

Local name : Mahu
Family: Sapotaceae
Plant part used: Flowers/Seeds
Ethnoveterinary uses :
Seedcake obtained after oil extraction is applied externally on chronic wounds to expel worms.
Distribution: Frequent in deciduous forest, RMB 303, Raver.
Threat Status: Not Endangered
Critical Note: Oil extracted from flowers is used for burning and cooking purpose.

21. Psidium guajava L.

Local name : Peru
Family: Myrtaceae
Plant part used: Leaf
Ethnoveterinary uses :
Blood purification, Diarrhoea and Vomiting: 100 gm of tender leaves of the plant mixed with equal amount of *syzigium cumini* & *Mangifera indica* leaves are pounded together, Juice extracted from fresh leaves is given twice a cupful for 3-4 days.
Distribution: Wild, RMB 351, Nagalwadi.
Threat Status: Least concerned

22. Holarrhena pubescens (Buch-Ham.) Wall. ex G.Don

Local name : Kuda
Family: Apocynaceae
Plant part used: Leaf/Stem
Ethnoveterinary uses :
Intestinal worms: Leaf Paste is made with water & rock salt(1:1), a cupful of paste mixed with fodder & given daily twice for 7 days to kill the intestinal worms.
Wound healing: Stem Bark paste is made with water & applied on wounds.
Distribution: In deciduous forest of Saoda. RMB 204, Saoda.
Threat Status: Vulnerable
Critical Note: 2gm fruit powder is very effective drug to control amoebic dysentery and diarrhoea (Sinha & Sinha, 2001).

23. Strychnos potatorum L.f.

Local name : Nirmali
Family: Longaniaceae
Plant part used: Fruit
Ethnoveterinary Uses:
Wound Healing : A ripen fruit pulp is made into paste with water & applied externally on wounds.
Distribution: Under growth forest, RMB 438, Malapur.
Threat Status: Critical Endangered
Critical Note: Seeds are washed by rubbing on stone & added into water as a water purifier.

24. Bombax ceiba L.

Local name : katesavar
Family: Bombacaceae
Plant part used: Seeds

Ethnoveterinary Uses: Measles in cows –Approx. 50 gm of seed powder mixed with honey(1:1) & given orally for 3 days
Distribution: Occasionally found in Satpuda East forest, RMB 401, Malapur.
Threat Status: Threatened
Critical Note: People of Himalaya use the roots as aphrodisiac and gums in Leucorrhoea (Sinha & Sinha, 2001). It is wonder drug for women who fail to conceive.

25. *Thespesia lampas* (cav.) Dalz. & Gibs.

Local name : Rankapas

Family: Malvaceae

Plant part used: Leaf

Ethnoveterinary Uses: 10-20 fresh leaves crushed in glassful of water. & given orally for suppression of waist after delivery in cows daily morning till cure.

Distribution: Not common in Edlabad forest. RMB 409, Edlabad.

Threat Status: Vulnerable

26. *Abitulon indicum* (L.) Sw. –

Local name - : Murda

Family: Malvaceae

Plant part used: Root

Ethnoveterinary use :

Galactagogue - 100gm of roots fed daily to lactating cows as galactagogue.

Distribution: Throughout common

Threat Status: Not endangered

27. *Lawsonia inermis* L. (Mendi)

Local name : Arni

Family: Vierbinaceae

Plant part used: Leaf

Ethnoveterinary use : Leaf paste is made into water & applied in foot cracks of goats & cows externally.

Distribution: An escape, Planted as hedge plant, RMB 188, Dhanora

Threat Status: Least concerned

28. *Ficus racemosa* L.

Local name : Umber

Family: Moraceae

Plant part used: Latex

Ethnoveterinary Use : 1-2 drops of Latex of the plant is added in teaspoonful of water and applied externally on wound thrice a day

Threat Status: Not endangered

29. *Digeria muricata* (L.) Mart

Local name : Chirchita

Family: Amaranthaceae

Plant part used: Whole plant

Ethnoveterinary use :

Wounds: Paste of the whole plant is applied on wounds externally daily once till cured.

Snake bite: 100 ml decoction of the whole plant is given twice daily for 7 days as an antidote on snakebite for cows

Distribution: Throughout common on wastelands, RMB 544, Mangrul

Threat Status: Not threatened

30. *Annona reticulata* L.

Local name : Ramphal,

Family: Annonaceae

Plant part used: Seeds

Ethnoveterinary use : Seed paste is made into water and applied externally for tick & mites

Distribution: Occasional in Yawal forest, RMB 122, Yawal forest

31. *Parkinsonia aculeata* L.

Local name : Vedi babhul

Family: Ceasalpiniaceae

Plant part used: Leaf

Ethnoveterinary use- :

Dog bite: In case of dog bite the leaf paste applied on the parts daily once for 15 days. It is good medicine for rabbies.

Distribution: Found in Nageshwar forest, RMB 424, Nageshwar.

Threat Status: Least concerned

32. *Leucas nutans* (Roth.) Spr

Local name : Gattatumb

Family: labiatea

Plant part used: Whole plant

Ethnoveterinary uses :

Mosquitoes repellent: whole Dried plant is burn to make fog is used as mosquito repellent in the huts.

Distribution: Not frequent, RMB 335, Pal.

Threat Status: Not Endangered

33. *Andrographis paniculata* (Burn.f.) Wall

Local name: Bhuinimb

Family: Acanthaceae

Plant part used: Leaf

Ethnoveterinary Uses: 100g coriandrum fruits & 10g of *piper nigrum* crushed together with a glassful of water, filtrate obtained is given for three days to cure Babesiosis

Distribution: Not frequent, RMB 335, Pal.

Threat Status: Vulnerable

4. Discussion and Conclusion

During study it was found that 33 types of plants species used on 30 type of veterinary diseases belonging to 24 families, 30 genera & 32 species used to cure veterinary diseases like wound healing, enhancement lactation, diarrhea, dysentery, cold, cough, suppression of lactation after delivery, constipation, mouth diseases, flea, lice, tick & mite repellent, babesiosis, abdominal pain, worm infections, measles retained placenta, easy delivery, snake bite, dyspepsia, fever, bone fracture and Ulcers. Most of the information reported from the tribal's of the area is found to be less known to the literature of Indian veterinary medicinal plants. The plants mentioned here are still popular in this area and enjoyed good reputation in traditional medicines used on veterinary diseases. Most of the drugs are utilized in fresh mode and as a cooled decoctions or infusions. It is necessary to make further investigations on these ethnomedicines for conservation of biodiversity to protect extinction of the ethnoveterinary medicinal plants There is also need to brought these plants under cultivation in a systematic manner to meet demands from traditional drug

based market. It is also needed to evaluate pharmacologically the efficiency of these plants against ethnoveterinary claim.

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