

STUDIES ON ETHNO-VETERINARY PLANTS USED BY TRIBAL PEOPLE OF
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ABSTRACT

The present research documented 37 plant species belonging to 26 families and 32 genera. Various types of ailments are treated by using herbal medicine in Gondia district of Maharashtra State of India. Tribal (Gond, Halba and Kanwar) as well as non tribal people of district are practice for the treatment of their animals since long decades.

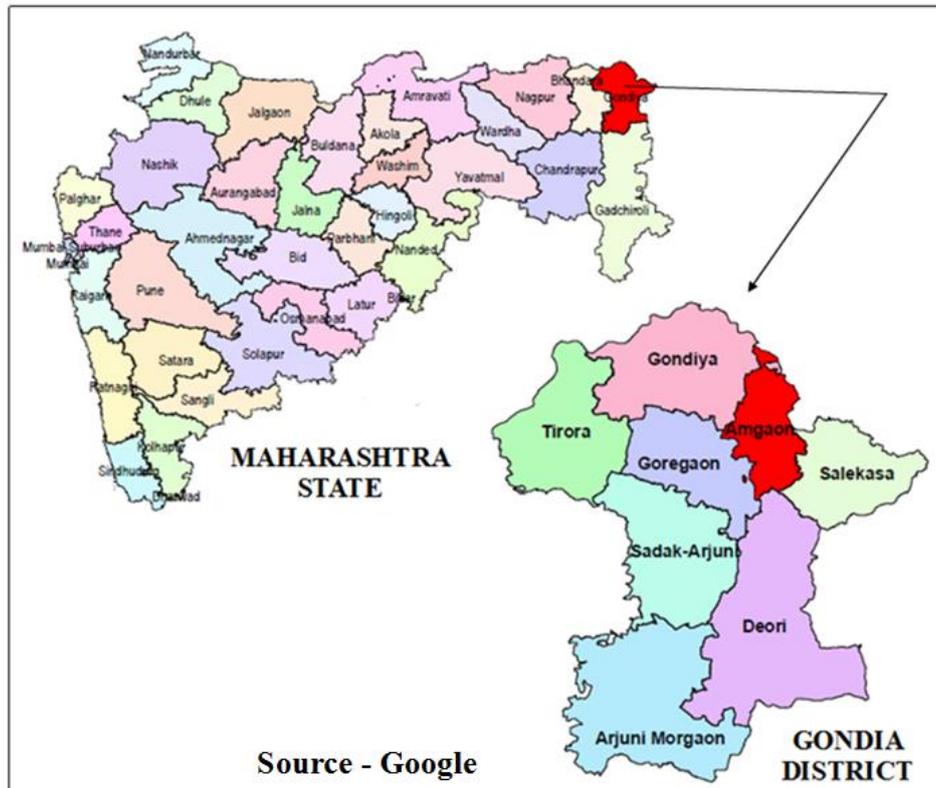
KEYWORDS: Ethno-veterinary, Gondia district, Tribal people, Maharashtra.**INTRODUCTION**

Pieroni *et al* (2004) reported natural remedies and nutraceuticals used in ethno-veterinary practices in Island Southern Italy.^[1] Takhar (2004) surveyed southern Rajasthan for ethno-veterinary herbal medicines. The study area included five districts Banswara, Dungarpur, Chittorgarh, Udaipur and Rajsamand.^[2] During the study 37 plant species recorded for the treatment of various diseases like skin, tumors, wounds, sores, swelling, lice, ticks, bone fractures, urinary and kidney stone problem, foot and mouth diseases. Harsha *et al* (2005) studied ethno-veterinary practices in Uttara Kannada district of Karnataka, India.^[3] Pandey (2006) reported *Sandha* is a unique blend of traditional herbs and fermentation technology. It is prepared by rural and tribal people of Gonda, Balrampur, Bahraich and adjoining districts of Terai region of Uttar Pradesh.^[4] Tiwari and Pande (2006) studied indigenous veterinary practices of Darma valley of Pithorgarh district, Uttaranchal, India.^[5] Nag *et al* (2007) reported indigenous animal healthcare practices for 30 diseases of domestic animals and their treatment by 62 plant species from Udaipur district, Rajasthan, India.^[6] Lans *et al* (2008) documented medicinal plant treatments for fleas and ear problems of cats and dogs in British Columbia, Canada.^[7] Saikia and Borthakur (2010) collected information of indigenous knowledge of local communities on medicinal plants used for curing various veterinary diseases in Gohpur, Sonitpur district, Assam state.^[8] Satapathy (2010) reported 88 plant species and 86 prescriptions for veterinary medicines are used among tribes of Jaipur district of Orissa.^[9] Bharati and Sharma

(2010) documented indigenous knowledge of various ethnic groups of Sikkim regarding animal healthcare.^[10] Tiwari and Pande (2010) investigated 23 household plants and plant products which are used in the treatment of animal diseases by local people and tribes of Uttarakhand.^[11] Pandit (2010) conducted study of ethno-veterinary plants of Jhargram division, West Bengal, India.^[12] Galav *et al* (2010) documented animal healthcare practices utilized by livestock owners at Pushkar animal fair organized every year near Ajmer, Rajasthan in month of Kartik (October or December).^[13] Deshmukh *et al* (2011) reported some of the unique ethno-veterinary treatments from Dhavda region of Jalna district of Maharashtra state, India.^[14] Salave *et al* (2012) studied traditional ethno-veterinary practices in Karanji Ghat area of Pathardi tahsil in Ahmednagar district, Maharashtra, India.^[15] Abbasi *et al* (2013) documented the traditional knowledge on botanical ethno-veterinary therapies in three districts of the lesser Himalayas of Pakistan.^[16] Moreki (2013) reported the use of indigenous plants used by family poultry rearers to treat and control diseases and parasites in 15 villages of Botswana.^[17] Galav *et al* (2013) studied traditional veterinary medicines used by livestock owners of Rajasthan, India.^[18] Yadav and Gupta (2014) collected information on ethno-veterinary practices by livestock owners in animal fair at Pushkar, Rajasthan, India.^[19] Lulekal *et al* (2014) documented ethno-veterinary plants of Ankober district, North Shewa zone, Amhara region, Ethiopia.^[20] Eshetu *et al* (2015) reported 49 ethno-veterinary medicinal plant species used by traditional healers in Ethiopia in treating different animal

diseases.^[21] Nyahangare *et al* (2015) reported 51 plant species as ethno-veterinary plants and practices used for ecto-parasite control in semi-arid small holder farming areas of Zimbabwe.^[22] Dhayapriya and Senthilkumar (2016) documented 25 plants species used as ethno-veterinary medicine among *Malayali* tribes in Bodamalai hills Southern Eastern Ghats of Namakkal district, Tamil Nadu, India.^[23] Reang *et al.* (2016) reported 37 species of ethno-veterinary applications of medicinal plants used by local communities to treat various ailments in Reang Tribeo South district Tripura, India.^[24]

Gondia district belongs to Vidarbha region of Maharashtra. It is bounded by Balaghat district (Madhya Pradesh State) in North, Rajnandgaon district (Chhatisgarh State) in East, Gadchiroli and Bhandara district of Maharashtra in South and West respectively. The district lies between 20.39⁰ to 21.38⁰ North latitude and 79.27⁰ to 80.42⁰ East longitudes. Navegaon National Park and Nagzira wildlife sanctuary are in the district.^[25]



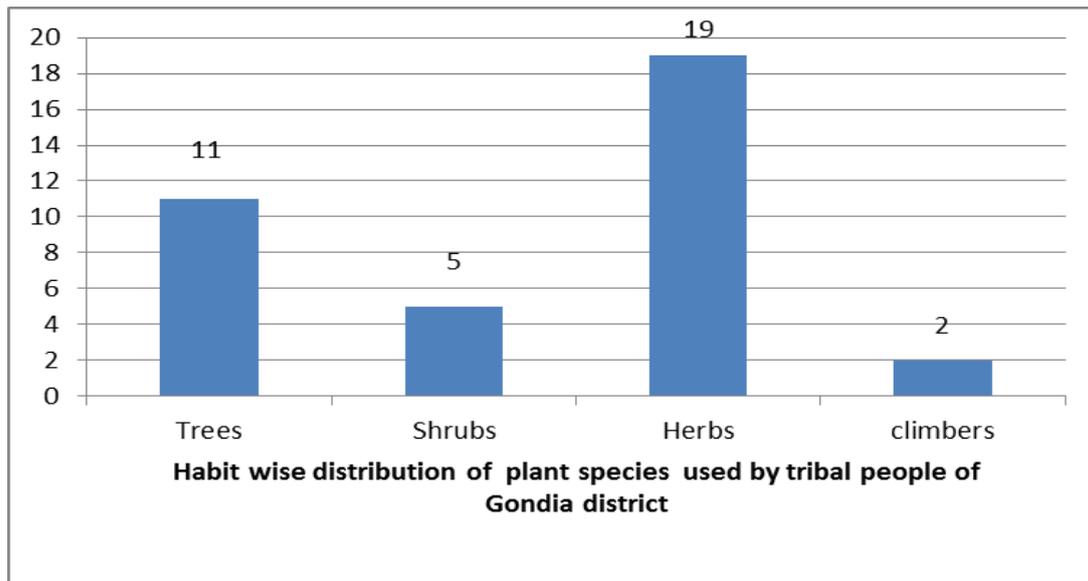
MATERIALS AND METHODS

Survey was conducted (2014-2017) in tribal villages of Gondia district, where tribal communities live with their customs and rituals. District divided into eight blocks namely Amgaon, Arjuni- Morgaon, Deori, Gondia, Goregaon, Sadak Arjuni, Salekasa and Tirora.

Plant specimens were collected with the permission of Maharashtra state Biodiversity Board. Specimens were identified with the help of floras and published literature (Sharma *et al.*, 1996^[26]; Naik, 1998^[27]; Lakshminarayanan *et al.*, 2000^[28]; Singh *et al.*, 2001^[29]; Yadav and Sardesai, 2002^[30] and Kahalkar, 2009^[31]). Herbarium were prepared and documented and preserved.

OBSERVATION AND RESULTS

Total 37 plant species were recorded during the investigation used for veterinary practices belonging to 35 genera and 26 families. The plants of ethno-veterinary significance are enumerated in alphabetical sequence of family names, followed by botanical name, part used, disease and habit. Among 37 plant species, 2 plant species are climbers, 19 herbs, 5 shrubs and 11 trees. Leaves are dominant plant part used followed by whole plant, bark fruit, root and tuber, stem, bulb, flower, corm, inflorescence, rhizome and seed. Details of the plants are given in the following paragraphs.



1. *Aegle marmelos* (L) Corr

Family- Rutaceae
Fls. & Frts.: April- November.
Local name- Bel
Part used- Leaf
Disease- Wound
Mode of administration- Leaf paste is prepared and applied on wound.
Locality- Bharitola forest (Salekasa taluka)

2. *Aerva lanata* (L.) Juss ex Sch

Family- Amaranthaceae
Local name- Pandharpandha
Part used- Whole plant
Disease- White gelatinous vaginal discharge
Mode of administration- Half kg shoot is given two to three days two times with fodder in white gelatinous vaginal discharge of cow and buffalo.
Locality- Mangezari village (Tirora taluka)

3. *Aeschynomene indica* L

Family- Fabaceae
Local name- Dhandhani
Part used- Leaves
Disease- Wound
Mode of administration- Leaf paste is used for wound treatment.
Locality- Banjari village (Salekasa taluka)

4. *Allium cepa* L.

Family- Alliaceae
Local name- Kanda
Part used- Bulb
Disease- Sprain and fracture
Mode of administration- 100 gm *Allium cepa* and *Allium sativum* cloves fried in sarso oil and oil is topically applied on fractured organ.
Locality- Tidka village (Arjuni- Morgaon)

5. *Allium sativum* L.

Family- Alliaceae
Local name- Lashun
Part used- Bulb
Disease- Sprain and fracture
Mode of administration- 100 gm *Allium cepa* and *Allium sativum* cloves boiled in Sarso oil and applied on fractured organ.
Locality- Tidka village (Arjuni- Morgaon)

6. *Amorphophalus paeonifolius* Dornst

Family- Araceae
Description- Tubers depressed-globose, 20-25 cm in diam., dark brown. Leaves 30-90 cm broad; segments spreading,
Local name- Suran, Zimikanda
Part used- Corm
Disease- Gastric trouble and indigestion
Mode of administration- Small sized tubers are crushed and given with water to cattle in gastric troubles and indigestion.
Locality- Kohkatola village (Salekasa taluka)

7. *Asparagus racemosus* Willd

Family- Asparagaceae
Local name- Marbad, Satawari
Part used- tuberous roots
Disease- Weakness and suppression of milk secretion (Galactischia)
Mode of administration- About ½ kg of tubers is given with fodder to cows and buffalos to increase milk secretion and also in weakness.
Locality- Kohkatola forest (Salekasa taluka)

8. *Bambusa arundinacea* (Retz.) Willd

Family- Poaceae
Local name- Vadud, Bans
Part used- Leaves
Disease- Gastric trouble

Mode of administration- About half kg of leaves given two to three times for three days to cure gastric troubles
 Locality- Yedamagondi forest (Deori taluka)

9. *Bambusa vulgaris* Schrad

Family- Poaceae
 Local name- Bans, Beru, Vadud
 Part used- Leaves
 Disease- Gastric trouble
 Mode of administration - Half kg of leaves given two to three times for three days to cure gastric troubles
 Locality- Umarpayali (Arjuni-Morgaon)

10. *Bombax ceiba* L.

Family- Bombacaceae
 Local name- Kate-Sawar
 Part used- Bark
 Disease- Dysentery
 Mode of administration- Approximately one to two liter bark decoction is given to cattle to cure dysentery.
 Locality- Bharitola (Salekasa taluka)

11. *Cassia fistula* L.

Family- Caesalpiniaceae
 Local name- Bahava
 Part used- Fruit
 Disease- Indigestion and respiratory disease
 Mode of administration- Fruit pulp is given to cattle when suffering from indigestion and respiratory problems.
 Locality- Garada forest (Goregaon taluka)

12. *Cayratia trifolia* (L.) Domin

Family- Vitaceae
 Local name- Parasbel
 Part used- Whole plant
 Mode of administration- Plants are given with fodder to hasten placenta.
 Locality- Bhawanitola village (Amgaon taluka)

13. *Chloroxylon swietenia* DC

Family- Flindersiaceae
 Local name- Bhera
 Part used- Leaves
 Disease- Wound
 Mode of administration- Leaf paste is applied for the treatment of wound.
 Locality- Ghiwari (Gondia taluka)

14. *Coix lacryma-jobi* L.

Family- Poaceae
 Local name- Kasai gawat
 Part used- Leaves and shoot
 Disease- suppression of milk secretion
 Mode of administration- Plants are collected, cut into small pieces, mixed with fodder and given to cattle for increase milk secretion.
 Locality- Lohara pond (Gondia taluka)

15. *Curculigo orchioides* Gaertn

Family- Hypoxidaceae
 Local name- Kalimusali
 Part used- Root
 Disease- Wound and dysentery
 Mode of administration- Root paste is applied on wound.
 Root extract is given orally to treatment of dysentery.
 Locality- Vicharpur forest (Salekasa taluka)

16. *Curcuma longa* L

Family- Zingiberaceae
 Local name- Haldi
 Part used- Rhizome
 Disease- Wound
 Mode of administration- Rhizome powder and small amount of lime mixed with coconut oil and used on animal wound. Powder is mixed in hot water and applied on wound of ox caused by plough. Powder is mixed in *Brassica* oil and applied on swollen necks of ox.
 Locality- Yerandi village (Arjuni-Morgaon)

17. *Dalbergia sisoo* Roxb

Family- Fabaceae
 Local name- Sisam
 Part used- Leaves
 Disease- urinal- genital disease
 Mode of administration- Leaves are given to control white vaginal discharge and general debility of cattle.
 Locality- Mangezari village (Tirora taluka)

18. *Dendrocalamus strictus* (Roxb.) Nees

Family- Poaceae
 Local name- Katang, Ranz
 Part used- Leaves
 Disease- Gastric trouble
 Mode of administration- Half kg of leaves is given two to three times for three days to cure gastric troubles.
 Locality- Kachargarh forest (Salekasa taluka)

19. *Euphorbia tirucalli* L

Family- Euphorbiaceae
 Local name- Dudhi
 Part used- Stem
 Disease- Neck swelling
 Mode of administration- Stem paste is applied on neck region in swelling.
 Locality- Bharitola village (Salekasa taluka)

20. *Leonotis nepetifolia* (L) R. Br

Family- Lamiaceae
 Local name- Zendu
 Part used- Flower
 Disease- Sterility
 Mode of administration- Inflorescence is given to cattle to cure sterility.
 Locality- Dandari village (Salekasa taluka)

21. *Litsea glutinosa* (Lour.) Robinson

Family- Lauraceae
 Local name- Lenja

Part used- Bark
 Disease- Dysentery
 Mode of administration- Extract is prepared from bark and orally given to cattle for the treatment of dysentery.
 Locality- Mandodevi forest (Goregaon taluka)

22. *Madhuca longifolia* (Koen.) Mac.var.latifolia (Roxb.) Chevalier

Family- Sapotaceae
 Local name- Mahu
 Part used- Flower
 Disease- Weakness
 Mode of administration- One to two kg of dried flowers soaked in water for 5 to 6 days in closed container and then given to cattle.
 Locality- Jayturtola forest (Amgaon taluka)

23. *Mangifera indica* L.

Family- Anacardiaceae
 Local name- Marka, Amba
 Part used- Bark and fruit pickle
 Disease- Dysentery, Urinary problems and fever
 Mode of administration- Bark extract of Mango, *Syzygium cumini* and *bombax ceiba* given in dysentery. 100 gm mango pickles are given orally to treat urinary troubles and in fever.
 Locality- Bharitola village (Salekasa taluka)

24. *Martynia annua* L

Family- Martyniaceae
 Local name- Baghnakhi
 Part used- Leaves
 Disease- Wound
 Mode of administration- Root poultice is bound on wound.
 Locality- Jayturtola village (Amgaon taluka)

25. *Melia azedarach* L.

Family- Meliaceae
 Local name- Bakan neem
 Part used- Bark
 Disease- Dysentery
 Mode of administration- About 200 gm bark is crushed and given with fodder to treat dysentery.
 Locality- Wovara village (Deori taluka)

26. *Mimosa pudica* L

Family- Mimosaceae
 Local name- Lajri
 Part used- Whole plant
 Disease- Suppression of Milk secretion
 Mode of administration- About ½ kg of plants material is given with fodder to cows and buffalos for milk secretion.
 Locality- Jambhadi (Sadak-Arjuni taluka)

27. *Musa paradisiaca* L.

Family- Musaceae
 Local name- Kela
 Part used- Stem

Disease- Gastric trouble
 Mode of administration- pulp of stem is given to treat gastric troubles and indigestion.
 Locality- Bagheda village (Amgaon taluka)

28. *Sauromatum venosum* (Aitt.) Schott

Family- Araceae
 Local name- Telyakand, Baichandi
 Part used- Tuber
 Disease- Sprain and neck swelling
 Mode of administration- Tuber is fried in oil and oil is used for massage and applied on swollen neck of ox.
 Locality- Kohkatola village (Salekasa taluka)

29. *Setaria intermedia* (Roth.) R. & S.

Family- Poaceae
 Local name- Sapela
 Part used- Inflorescence
 Diseases- Whitish gelatinous vaginal discharge
 Mode of administration- About 250 gm flowers (inflorescence) are given with *Aerva lanata*
 Locality- Chandalmeta village (Deori taluka)

30. *Solanum virginianum* L

Family- Solanaceae
 Local name- Bhaskatiya, Karbhatai Part used- Whole plant
 Disease- Indigestion, Fever and Dysentery
 Mode of administration - Fruits are given to cattle in respiratory and indigestion as well as in fevers. About 100 gm whole plant is given in dysentery.
 Locality- Kohkatola village (Salekasa taluka)

31. *Syzygium cumini* (L.) Skeels

Family- Myrtaceae
 Local name- Jamun
 Part used- Bark
 Disease- Dysentery
 Mode of administration – About 200 gm bark of each *Syzygium cumini*, *Mangifera indica* and *Bombax ceiba* extracted and given orally to treat dysentery.
 Locality- Beltola village (Gondia taluka)

32. *Tamarindus indica* L.

Family- Caesalpiniaceae
 Local name- Chich, Sitta
 Part used- Fruit
 Disease- Poison consumption
 Mode of administration- 1 kg of fruits are mixed with water and given to cattle to neutralize the poison.
 Locality- Kohkatola village (Salekasa taluka)

33. *Tephrosia purpurea* (L.) Pers

Family- Fabaceae
 Local name- Surphankhi, Diwali
 Part used- Whole plant
 Disease- Weakness
 Mode of administration- Plants are given to cattle for health
 Locality- Bharitola (Salekasa taluka)

34. *Trichosanthes cucumerina* L

Family- Cucurbitaceae

Local name- Kawali

Part used- Fruit

Disease- Foot- mouth viral disease

Mode of administration- Fumes of fruits are applied in foot mouth viral infection

Locality- Sodlagondi village (Goregaon taluka)

35. *Tridax procumbens* L.

Family- Asteraceae

Local name- Kamarmodi, Ghavpalla

Part used- Whole plant

Disease- Wound

Mode of administration- Plant paste is applied on wound.

Locality- Bhagi (Deori taluka)

36. *Triticum aestivum* L

Family- Poaceae

Local name- Gahu

Part used- Seed

Disease- Blindness

Mode of administration- 100 gm grains used to prepared ash and ash is sprinkled into the eyes of cattle to cure blindness.

Locality- Gonditola (Amgaon taluka)

37. *Vetiveria zizanioides* (L.) Nash

Family- Poaceae

Local name- Ursudi, Khasgawat

Part used- Root

Disease- Gastric trouble and hasten placenta

Mode of administration- 200 gm roots are given with fodder. Roots are also given to hasten placenta.

Locality- Chichgarh (Deori taluka)

*Aegle marmelos**Aeschynomene indica*



Amorphophalus paeonifolius



Asparagus racemosus



Bombax ceiba



Cassia fistula



Euphorbia tirucalli



Leonotis nepetifolia



Litsea glutinosa



Madhuca longifolia var. *latifolia*

*Martynia annua**Mangifera indica**Melia azedarach**Musa paradisiaca**Mimosa pudica**Sauromatum venosum*

DISCUSSION

For farming and milk production, tribal people reared animals like goat, cows, ox and buffalo. For the treatment of pet animal's diseases, tribal people used herbal medicine. During the present investigation, 37 plant species documented used by tribal and rural people

of Gondia district belonging to 26 families and 35 genera. The bark extract of *Bombax ceiba*, *Litsea glutinosa*, *Melia azedarech*, *Syzygium cumini*, *Curculigo orchoides* and *Mangifera indica* given to cure from dysentery. *Coix lacryma- jobi* (whole plants) and *Asparagus racemosus* (tuberous roots) are given in galactischia as galactogogue. *Musa paradisiaca*,

Bambusa arundinacea, *Bambusa vulgaris*, *Dendrocalamus strictus*, *Vetiveria zizanioides* and *Amorphophalus paeonifolius* are used in gastric troubles. The leaf paste of *Tridax procumbense*, *Aeschynomene indica*, *Chloroxylon swietenia*, *Martynia anua*, *Aegle marmelos* and *Curculigo orchioidea* are used to cure wound. *Aerva lanata* and *Setaria intermedia* are given in white and gelatinous vaginal discharge and to treat sterility. To hasten the placenta, leaves and shoot paste of *Cayratia trifolia* is orally administered. For health of the animals *Tephrosia purpurea* (leaves and shoot) and *Madhuca longifolia* var. *lattifolia* (flowers) orally given. The ash is prepared from seeds of *Triticum aestivum* and sprinkled in the eyes of cattle to cure blindness. To check sterility of animals the flowers of *Leonotis nepetifolia* is given with fodder. To relieve from sprain and fracture, *Allium cepa* (bulb) and *Allium sativum* fried in sarso oil and applied. If the animal accidentally consumed poison like fertilizer or pesticides, at that situation, fruit pulp of *Tamarindus indica* is orally administered to neutralize the poison. *Cassia fistula* and *Solanum virginianum* are given in fever and indigestion.

Pieroni et al (2004) reported ethno-veterinary herbal medicine for the treatment of animals by shepherds and farmers to treat skin disease, tumors, wounds, sore, swelling, lice, bone fracture, urinary and kidney stone.^[1] *Asparagus racemosus* is used to treat cattle arthritis, Rhizome of *Curcuma longa* and whole plant of Coriander to treat foot and mouth disease in Western Ghats of Karnataka (Harsha et al, 2005^[3]) while in Gondia district *Curcuma longa* is used for the treatment of wound and to treat foot and mouth disease. As well as fruits of *Trichosanthes cucumerina* tied in animal's house and fruits are crushed and sprinkled with water throughout the village to eradicate the foot mouth disease.

Pandey (2006) reported that fermented flower of *Madhuca indica* given to cattle as demulcent and as tonic, *Melia azedarach* leaf juice is used as anthelmintic, diuretic and emmenagogue.^[4] Nag et al, (2007) reported *Bombax ceiba* and *Bambusa arundinacea* for bone for livestock from Udaipur district, Rajasthan and *Cassia fistula* for constipation. *Tamarindus indica* used in food poisoning and *Asparagus racemosus* as galactagogue.^[6] Lans et al (2008) reported *Allium sativum* and *Ricinus communis* for the treatment of fleas and ear problems of cats and dogs.^[7] Saikia and Borthakur (2010) reported leaf juice of *Annona squamosa* to kill ectoparasites, bulb paste of *Allium cepa* in insect bites and paste of *Allium sativum* with paste of ginger rhizome in indigestion.^[8] Satapathy (2010) reported *Allium cepa* used to cure cough and *Annona squamosa* to kill ectoparasites.^[9] Galav et al (2010) also reported some ethno-veterinary plant species, the spine of *Aegle marmelos* pricked in the tail of animal to prevent from its degeneration and fruit pulp is used in foot and mouth disease. Bark of *Bombax ceiba* reported as purgative.^[13] Deshmukh et al (2011) reported ethno-veterinary medicine, root of *Asparagus*

racemosus as galactagogue. *Cassia fistula* (dried pod powder) given orally to cure from asthma and pneumonia.^[14] Salave et al (2012) reported ethno-veterinary practices. Leaf paste of *Allium cepa* with fresh leaves of *Mimosa pudica* is given in unknown insect bite and the fruit of *Leonotis nepetifolia* mixed with pinch of salt and orally given to age old female goats and sheep to successful conception.^[15] Abbasi et al (2013) recorded bulb of *Allium cepa* is used as galactagogue.^[16] Moreki (2013) documented ethnoveterinary practices for health of poultry^[17] (given bulb decoction of *Allium cepa* and *Allium sativum*). Galav et al (2013) reported that *Aerva lanata* is used by livestock owner in Rajasthan as antidote of snake bite.^[18]

CONCLUSION

Indian people have good knowledge of ethno-veterinary treatment of cattle. Several plants are used for the treatment of animals. All the tribal and local people of the Gondia district have tremendous indigenous knowledge for the veterinary practices. Present documentation may be helpful to animal owners as well as pharmaceutical industries those are involved in the production of animal medicine.

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