



PHYTOTHERAPEUTIC VETERINARY PRACTICES IN KENDRAPARA DISTRICT, ODISHA, INDIA

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ABSTRACT

The main objective of the present investigation was to document the phytotherapeutic knowledge on veterinary health care management practices in the interior of Kendrapara district, Odisha, India. Ethnoveterinary data were collected using structured questionnaires, complemented by unstructured interviews and informal conversations with local people engaged in animal husbandry. Therapeutic use of 49 plant species belonging to 13 families for management of health care problems of domesticated animals was recorded. Different plant parts like leaf, fruit, seed, stem, root and whole plant were reported as used in raw or processed form against 29 ailments. Prominent diseases treated by plant remedies were cardiovascular ailments, diarrhoea, jaundice, skin ailments and rheumatism. Study reveals that there is great agreement among informants for the usage of *Allium sativum* L., *Azadirachta indica* A.Juss., *Asparagus recemosus* Wild., *Bambusa vulgaris* Schrad., *Centella asiatica* L., *Cissampelos pareira* L., *Mimosa pudica* L., *Ricinus communis* L., *Saccharum officinarum* L. and *Tinospora cordifolia* (Willd.) Hook. f. & Thoms. These species may be used for the development of new, cheap, effective, and eco-friendly herbal formulations for veterinary health care management.

KEYWORDS: Ethnoveterinary; traditional knowledge; livestock; medicinal plants.

INTRODUCTION

Animal husbandry, the backbone of the rural sector of India provides a wide range of services and products including animal power, wool and supplementary nutrition^[1]. It plays a substantial role in the macro and micro economy of the country. The spectrum of livestock diversity in the country is rich and varied. This is evident from the occurrence of different breeds of sheep, goats, cattle, horses, mules, buffaloes and poultry *etc.* Health is a major constraint to livestock production and development in rural areas where majority of the livestock is found. These areas are not easily accessible to modern allopathic modalities and people are less economically endowed albeit coping with enormous animal health problems. According to the United Nations Food and Agricultural Organization (FAO), the lack of drugs to treat diseases and infections results in losses of 30-35% in the breeding sector of many developing countries, where poor animal health remains the major constraint to increased production^[2]. High costs and inaccessibility have helped the traditional treatment practices in these countries^[3]. The existence of rich and efficient ethnoveterinary traditions in the villages of India form integral part of the family and play an important socio-religious and economic role. They comprise of belief, knowledge, practices and skills pertaining to health care and management of livestock. Over centuries, people have developed these folk health practices and are transmitted across generations by an oral tradition. Due to the nature of oral transmission, this form of local knowledge remains fragile and threatened, and presents an urgent need for being recorded and

documented. Most of these systems are unique and are often known only to a few individuals and communities. There have been many ethnoveterinary reports from India concerning the use of plants in therapeutic protocols^[4-9]. In Odisha, this type of study is seldom undertaken^[10]. It is especially true in case of Kendrapara district of Odisha, with around 33,738 cattle (cross breed), 41,6662 (indigenous), cows 26,866 (cross breed), 246798 (indigenous), 17,002 buffaloes, 38,886 sheep, 1,34,590 goats and 2099 pigs (Livestock Census 2003). The district has only 14 veterinary health centers for the treatment of those domestic animals. In this context, no investigation has been so far done to examine the potential of medicinal plants in curing different animal diseases in Kendrapara district of Odisha, India. Therefore, the current study was conducted in rural areas of the district, to survey, explore and document such indigenous knowledge of phytotherapy.

MATERIALS & METHODS

Study area

Kendrapara district (20° 21' - 20° 47' N and 86° 14' - 87° 03' E) is situated (Fig.1) in central coastal plain zone of the Odisha and covers an area of 2644 km² with a population of 15.582 lakhs (2011 Census). Four other districts namely Cuttack, Jagatsingpur, Jajpur and Bhadrak surround Kendrapara district while a part is bounded by the Bay of Bengal. The district lies in the river delta formed by the Brahmani and Baitarani as well as branch rivers of Mahanadi. Majority of the people are villagers (94.2%) with agriculture as their main occupation from

ancient period. They also rear cattle which play a pivotal role in the agricultural system. The district accounts for 1.7% of the state's territory and shares 3.5% of the state's population. The climate of the district is warm and humid. Three distinct seasons are felt during the year. Rainy season (June to October), winter (November to February) and summer (March to June). The annual rainfall is varying from 1500 mm to 1550 mm. The air temperature ranges from 17° to 48°C. Periodic earth tremors, thunder

storms in the rains and dust storms in April and May are characteristic features of the district. The district has its unique importance in the world for 'Bhitarkanika national park' and Gahirmatha sanctuary for *Olive ridley* turtles. The shrines of "Baladevjew" (Lord Balabhadra) and "Pancha Barahi" (the five mothers) along with numerous ancient shrines are further characteristic features of the place.

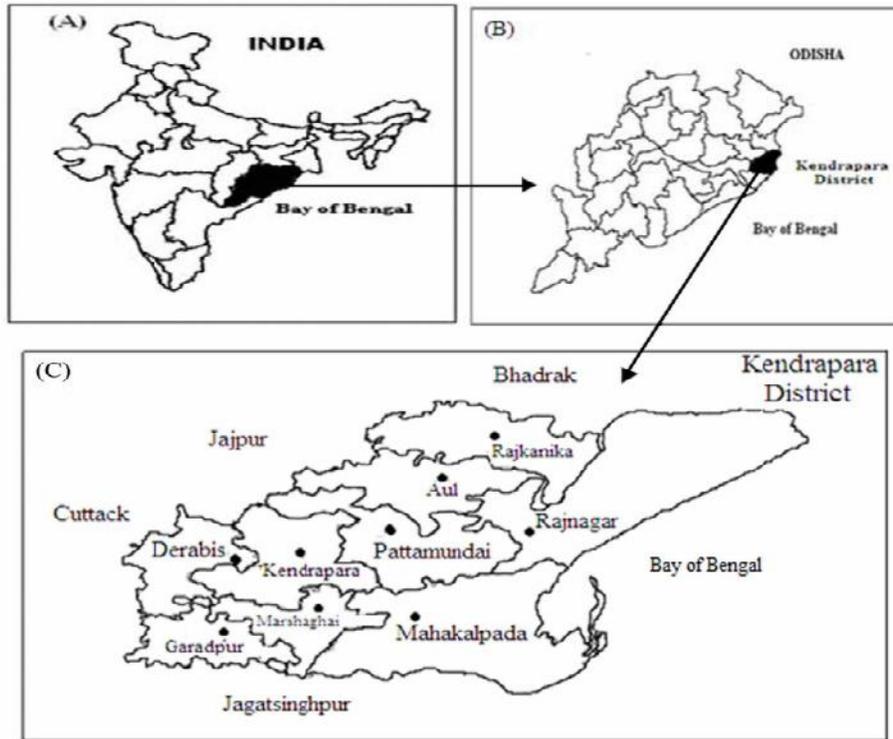


FIGURE 1: (A) Location of Odisha state in the eastern region of India, (B) Map of Odisha state (C) Study area showing different blocks of Kendrapara district

Data collection

The field study was carried out monthly following established and standard procedures^[11-13]. The information on the use of medicinal plants was obtained through structured questionnaires, complemented by free interviews and informal conversations^[14]. We interviewed "native specialists", who were considered by their communities as having exceptional knowledge about the use of plants. One hundred and twenty five (88 men and 37 women) persons were interviewed. Among these interviewees, 10% were at age of 21-40years, 40% were 61 years old or more and half of the people (50%) were at age of 41-60. Knowledgeable persons or medicine men, Kaviraj, experienced and aged persons, local healers of the villages were consulted for recording local name; parts of plants used methods of drug preparation and recommended doses. Personal interviews and group discussions with local inhabitants revealed some valuable and specific information about the plants, which were further authenticated by crosschecking^[15]. Interviews with people were also conducted to know more details about species, their management and distribution. The collected specimens were processed, dried and herbarium specimens

were prepared. Voucher specimens of the collected plant species were deposited in the herbarium of the Department

of Botany, Chandbali College, Chandbali. The consulted literatures during field time for identification of species were Haines^[16], Saxena and Brahmam^[17].

RESULTS

The medicinal plants collected are depicted in Table 1 with their scientific names, family names, local names if any, part used, and methods of preparation. Forty nine (49) plant species of ethnopharmacological importance were gathered and documented through out the study period (Fig. 2-5). These medicinal plants were distributed among 27 families. The most important medicinal plant families were Poaceae (6 species), Fabaceae (5 species), Caesalpinaceae (3 species), and Euphorbiaceae (3 species). Other families were represented by at most one or two species. Analysis of the growth forms (Fig. 6) of these medicinal plants revealed that herbs constituted the largest number or proportion with 25 species (51%), followed by 9 shrubs (18.4%), 8 trees (16.3%), and 7 climbers (14.3%). Most of the medicinal plant resources

(86.7%) were collected from forest and grassland areas; only a few (13.3%) were collected from cultivated areas. This indicates that villagers depend on natural environment rather than home gardens to obtain medicinal plants. However, in recent years, due to over-exploitation and over-collection these medicinal plants have become

scarce. Though many villagers thought the period of September and November to be the optimal time for medicinal plant collection, they did not reserve a special time to harvest and preserve medicinal plants annually. Rather, they generally looked for and prepared medicinal plants when animals are ill.

TABLE 1. Plant species used in ethnoveterinary practices in Kendrapara district, Odisha

Botanical name, family & local name	Parts used	Disease/condition	Mode of application
<i>Abrus precatorius</i> L. (Fabaceae) 'Kaincha'	Leaf ,seed	Cardiac problem	5-10g powdered seed with water is given to cure cardiac problems. Leaf paste is applied on gall neck and breast swellings.
<i>Aegle marmelos</i> Correa ex Roxb. (Rutaceae) 'Bela'	Fruit	Diarrhea	Unripe fruit is burned and given to animals cure diarrhea.
<i>Allium cepa</i> L. (Amarylidaceae) 'Piyaja'	Bulb	Insect bite	Bulb paste is applied in insect bites to relieve pain.
<i>Allium sativum</i> L. (Amarylidaceae) 'Rasuna'	Bulb	Wound	Paste of garlic and turmeric is applied on open wound after that it is covered with <i>Calotropis procera</i> leaves.
<i>Aloe vera</i> L. Burm.f. (Liliaceae) 'Ghikuanri'	Leaf	Burns	Leaf pulp mixed with sore milk and water is applied twice daily to cure burns.
<i>Andrographis paniculata</i> Nees.(Acanthaceae) 'Chireita'	Root	Insect bite	50 g root mixed with 10 g pepper and garlic pounded and the extract is given orally thrice a day for two days.
<i>Ananas comosus</i> (L.)Merr. (Bromeliaceae) 'Sapuri'	Leaf	Worm	20 ml of the extracted juice and 2-3 g of black salt is given orally to cure worms.
<i>Asparagus recemosus</i> Wild. (Liliaceae) 'Satabari'	Root,shoot	Fever, dysentery	5-10g of root, 8-10 tender leaves of <i>Cymbopogon flexuosus</i> , rice curd, black salt and a pinch of black carbon (produced from cooking process in thatched house) are crushed and given to cure fever. Shoot paste of tender shoot (100g) along with Jaggery and buttermilk is given to cure dysentery.
<i>Azadirachta indica</i> A.Juss. (Meliaceae) 'Neem'	Leaf	Foot and Mouth disease	Neem leaves boiled in water for some time, after cooling, the water is used to wash the affected part and then apply the camphor (<i>Limnophila aquatica</i> Roxb.) dust against Foot and Mouth disease locally called as Phatua. For Chaua (local name of another Foot and Mouth disease) neem leaves boiled in water for some time, after cooling, the water is used to wash the affected part.
<i>Bambusa vulgaris</i> Schrad, (Poaceae) 'Baunsa'	Leaf	Cough, mouth sore, dirrohaea	Leaf paste is given to cure cough and mouth sore.100 g boiled rice, 10g ashes of cow dung and 7-8 tender leaves is crushed and given to calf to cure dirrohaea.
<i>Brassica juncea</i> L. (Brassicaceae) 'Sorisha'	Seed	Cold	The oil is extracted from the seed and applied over the leg and root of the ear.
<i>Butea monosperma</i> (Lam.)Taub (Fabaceae) 'Palasa'	Seed	Worm	A mixture of seed powder of <i>Butea monosperma</i> , salt and water is given orally for deworming.
<i>Calotropis procera</i> (Ait.) R.Br. (Asclepiadaceae) 'Arakh'	Stem	Skin diseases	Stem is burnt for the removal of external parasite like lice and ticks.
<i>Cassia fistula</i> L. (Caesalpiniaceae) 'Sunari'	Fruit	Cold	Ripened dry fruit is warmed and placed over the affected area to treat enlargement of gland in throat due to cold.
<i>Centella asiatica</i> L. (Apiaceae) 'Thalkudi'	Leaf,whole plant	Indigestion	Leaf paste is given once daily for five days to cure indigestion. About 20 gm of plant is crushed and administered thrice daily to livestock to cure urinary disorders.
<i>Cissampelos pareira</i> L. (Menispermaceae) 'Akanibindi'	Leaf ,root	Diarrhoea	20g tender leaf along with fruit of Bela (<i>Aegle marmelos</i> Correa ex Roxb.) is crushed and the paste is given orally to cure diarrhoea. Paste of root is applied externally as antidote on insect bite and scorpion sting. The root is crushed and extract is given twice daily to cattle to treat blood in urine.
<i>Citrus limon</i> (L.)Burm.f. (Rutaceae)'Lembu'	Fruit	Eye disease	Fruit juice is dropped on eyes to check or cure night blindness.
<i>Cocos nucifera</i> L. (Arecaceae) 'Nadia'	Fruit	Skin disease	The oil is extracted from the fruit and mixed with turmeric and applied over the affected area. Luke warm coconut oil heated with garlic is applied on open wound.
<i>Colocasia esculenta</i> (L.) Schott (Araceae)	Stem, leaf	Induce fertility	Crushed root mixed with animal feed is given to increase milk yield. Stem and leaves are crushed and boiled in one liter water and given orally, twice a day, for 5 days to induce fertility.
<i>Curcuma longa</i> L. (Zingiberaceae) 'Haldi'	Rhizome	Eye disease	Fresh rhizome extract is applied externally on the affected eyes to cure eye diseases. Mixture of <i>Curcuma longa</i> rhizome powder, salt and cow ghee is fed to cure the swelling of teats (nipple).
<i>Cuscuta reflexa</i> Roxb. Cuscutaceae, 'Nirmuli'	Whole plant	Skin diseases	A mixture of nirmuli, chireita (<i>Andrographis paniculata</i> Nees.) and turmeric (<i>Curcuma longa</i> L.) is crushed and the paste is applied over the affected area. The paste mixed with jiggery is given orally to

<i>Cymbopogon flexuosus</i> (Nees ex Steud) Wats (Poaceae) 'Dhanatwari'	Leaf	Dirrohaea	cure cardiac ailments. Plant paste mixed with curd is given to cure diarrhea.
<i>Cynodon dactylon</i> Pers. (Poaceae) 'Duba'	Whole plant	Dirrohaea, injury	Crushed leaf mixed with <i>Piper nigrum</i> and curd is given to cow and calf to cure dirrohaea.
<i>Datura metel</i> L. (Solanaceae) 'Kaladudura'	Leaf	Rabies	Whole plant is crushed with 5-10 gm of Ginger and mixed with jaggery is given to goats to cure dirrohaea. In case of bleeding from any injury paste of Duba is applied. Crushed whole plant along with ashes of cow dung is given orally to cow to cure indigestion
<i>Euphorbia thymifolia</i> L. Euphorbiaceae, 'Patra siju'	Shoot	Ectoparasite	Tender leaf juice mixed with sugar and water is given once daily for three days to prevent rabies.
<i>Euphorbia tirucalli</i> L. Euphorbiaceae, 'Dungla siju'	Shoot	Rheumatism	The shoot is burnt to kill ectoparasite of domestic animals.
<i>Erythrina indica</i> Lamk. (Caesalpinaceae) 'Paladhua'	Leaf	Worm	The shoot paste is tied over the affected part.
<i>Ficus hipsida</i> L. Moraceae 'Dimri'	Leaf	Sore	Leaf paste is given to the animal to kill worms.
<i>Gymnema sylvestre</i> (Retz) R.Br. ex Sch. Asclepiadaceae, 'Gudmari'	Leaf	Eye	Leaves with common salt are rubbed on the tongue to cure sore of cow and bullock.
<i>Ipomoea mauritiana</i> Jacq. Convolvulaceae, 'Bhuin kakharu'	Fruit	Kidney problem	Fresh leaf paste is applied on the eyelid to cure cataract.
<i>Justicia adhatoda</i> L. Acanthaceae, 'Basanga'	Leaf	Bronchitis	The fruit is cut into pieces and the curry is given orally to cure kidney problems. Powdered root mixed with jaggery is also recommended to increase lactation among milching cattle.
<i>Lasia spinosa</i> (L.) Thw. Araceae 'Kantasararu'	Rhizome	Dog bite	Leaf paste is given to cow and buffalo to cure bronchitis.
<i>Lawsonia inermis</i> L. (Lythraceae) 'Manjuati'	Leaf	Diarrhoea	Paste of rhizome (100g) is applied over the affected part of goat for 3-4 days.
<i>Mimosa pudica</i> L. (Mimosaceae),	Leaf	Insect bite	Leaf of <i>Lawsonia inermis</i> mixed with seed powder of <i>Coriandrum sativum</i> L. and water kept in pitcher over night is given twice a day for three days to cure diarrhea.
<i>Musa paradisiaca</i> L. Musaceae, 'Kadali'	Fruit	Dirrohaea, sore	Leaf paste mixed with turmeric and goat milk is applied locally.
<i>Oryza sativa</i> L. Poaceae	seed	Fever	Feeding of rice husk with banana for 2-3 days is effective to control dirrohaea. Paste of <i>Musa paradisiaca</i> and sugar candy in water is given orally twice daily for three days to cure the blisters and hoof sore(s).
<i>Piper betel</i> L. (Piperaceae) 'Pana'	Leaf	Indigestion	50 g rice curd, 100g fruit of <i>Ipomea mauritiana</i> , a pinch of carbon black of earthen pot and 25g leaf of <i>Cymbopogon flexuosus</i> is crushed and given for three days to cure fever.
<i>Piper nigrum</i> L. (Piperaceae) 'Golmaricha'	Seed	Gastro-intestinal problems	Leaf paste mixed with Juani (<i>Trachyspermum ammi</i>), black pepper and ginger is given to cure indigestion.
<i>Ricinus communis</i> L. Euphorbiaceae, 'Jada'	Seed.	Constipation, rheumatism	Curd 50 mL, 8-10 seeds of <i>Piper nigrum</i> and shoot portion of <i>Tinospora cordifolia</i> with common salt is grinded and given to cow for five days to cure gastro-intestinal problems.
<i>Saccharum officinarum</i> L. (Poaceae) 'Akhu'	Shoot	Jaundice	10-15 g of seed is crushed and given to cattle along with cattle feed for constipation. Leaf fried with cow ghee is stringed on the affected part.
<i>Tamarindus indica</i> L. (Caesalpinaceae) 'Tentuli'	Leaf	Blood dysentery.	Sugarcane is cut into small pieces and it was given to cow and buffalo to cure jaundice. Mixture of boiled rice, charcoal and jaggery is also given orally to cure diarrhea.
<i>Tinospora cordifolia</i> (Willd.) Hook. f. & Thoms. Menispermaceae, Guluchilata	Stem	Mastitis, vomiting	Paste of 10-15 tender leaves and mustard seed is given to domestic animals for three days in empty stomach to control blood dysentery.
<i>Trigonella foenum-graecum</i> L. (Fabaceae) 'Methi'	Seed	Haematuria	Crushed stem is mixed with wheat flour and given to animal to cure mastitis. If animal feed on poisonous plants then whole plant extract is given orally to animals causing vomiting.
<i>Triticum aestivum</i> L. (Poaceae) 'Gahama'	Seed	Constipation	Seed paste is given to the animal daily for three days to cure haematuria.
<i>Vernonia cinerea</i> (L.) Less. Asteraceae 'Poksunga'	Seed	Fever	A mixture with wheat flour, cow ghee and molasses is given to animal for constipation.
<i>Vigna mungo</i> L. Fabaceae, 'Biri'	Seed	Stomach pain	Seed paste is given to animal to treat food poisoning. Infusion of seed is given to cure fever.
<i>Vigna radiata</i> (L.) R. Wilczek, Fabaceae, 'Moong'	Seed	Cough	Seed is crushed and mixed with the oil extracted from seed of <i>Ricinus communis</i> L. and given to calf against stomach pain.
<i>Vitex negundo</i> L. Verbenaceae, 'Begunia'	Leaf	Diarrhoea	<i>Vigna radiata</i> seed powder mixed with <i>Arachis hypogea</i> oil is given to animal twice a day to cure cough.
			Leaves mixed with fodder are given to cure diarrhea.

Zingiber officinale Rosc.
Zingiberaceae, 'Ada'

Rhizome

Constipation

Crushed rhizome is given with wheat flour for constipation.



FIGURE 2(A) *Abrus precatorius* L. (B) *Aegle marmelos* Correa ex Roxb. (C) *Andrographis paniculata* Nees. (D) *Ananas cosmosus* (L.) Merr. (E) *Asparagus recemosus* Wild. (F) *Azadirachta indica* A. Juss.



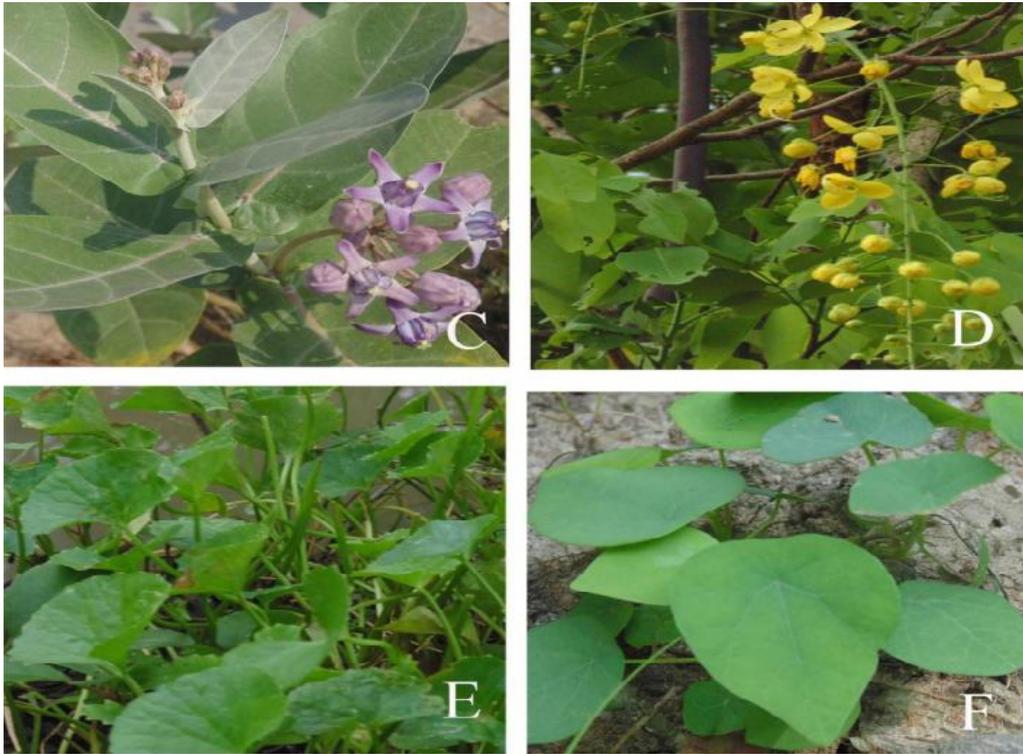


FIGURE 3(A) *Bambusa vulgaris* Schrad. (B) *Butea monosperma* (Lam) Taub. (C) *Calotropis procera* (Ait.) R.Br. (D) *Cassia fistula* L. (E) *Centella asiatica* L. (F) *Cissampelos pareira* L.



FIGURE 4: (A) *Cuscuta reflexa* Roxb. (B) *Cymbopogon flexuosus* (Nees ex Steud) Wats. (C) *Datura metel* L. (D) *Erythrina indica* Lamk. (E) *Ficus hipsida* L. (F) *Gymnema sylvestre* (Retz) R. Br. Ex Sch.

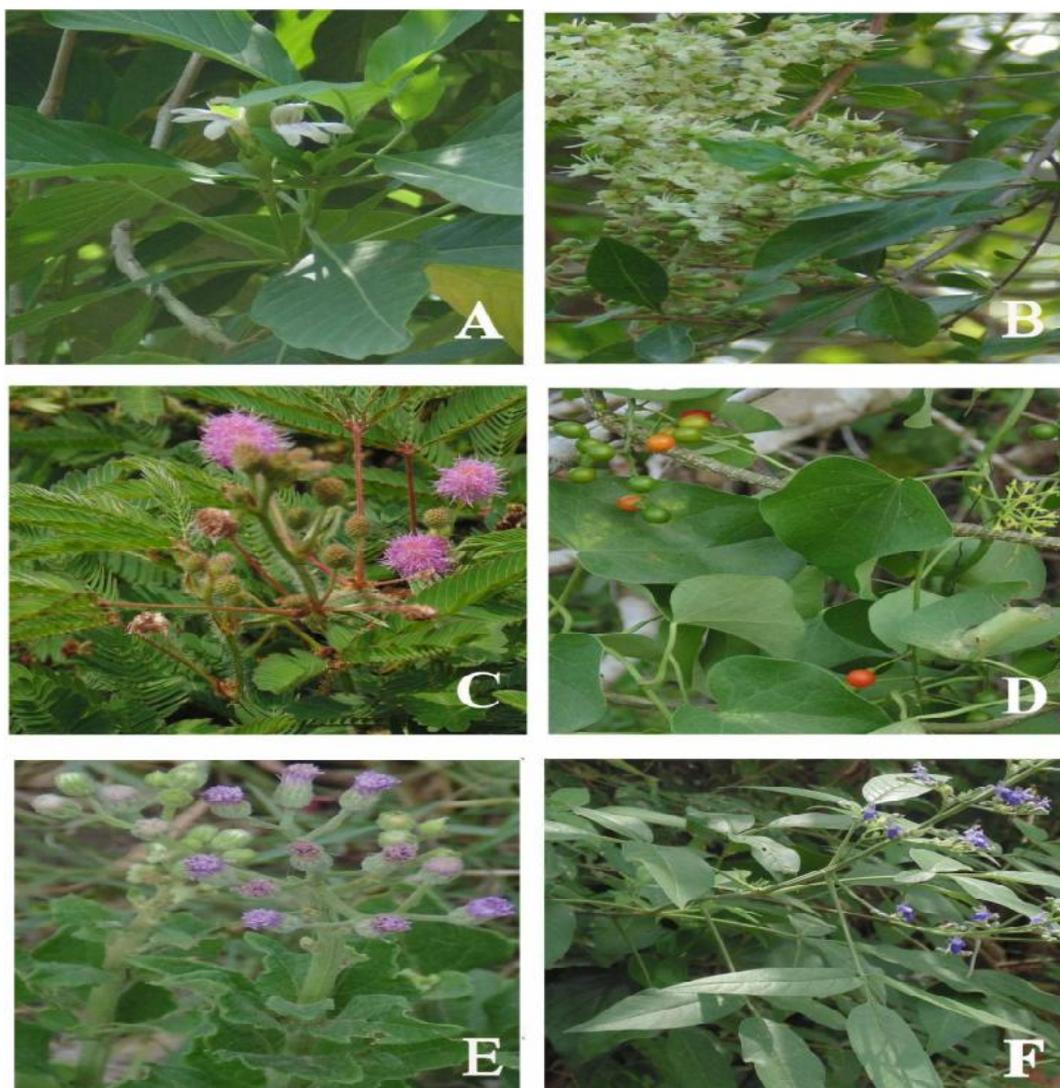


FIGURE 5: (A) *Justicia adhatoda* L. (B) *Lawsonia inermis* L. (C) *Mimosa pudica* L. (D) *Tinospora cordifolia* (Wild.) Hook. f. & Thoms. (E) *Vernonia cinerea* (L.) Less. (F) *Vitex negundo* L.

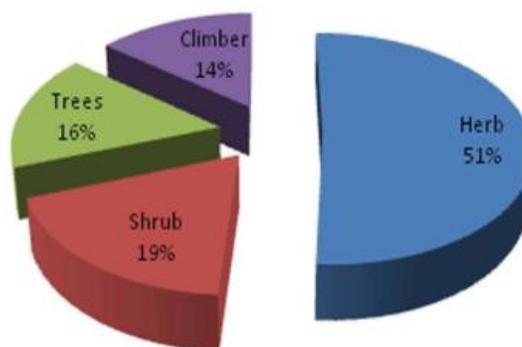


FIGURE 6: Growth from analysis

Leaves were the plant parts most frequently used, constituting 34.7%, followed by seeds (20.4%), fruits (14.3%), and the remainders were rhizome, stem, shoot, bulb, root and whole plant (Fig. 7). The percentage of use of aerial plant parts were higher (85.7%) than that of underground parts (14.3%). The animal diseases treated with plant remedies were cardiovascular ailments, diarrhea, fever, colds, constipation, jaundice, rheumatism,

skin ailments and sores (many sores resulting from skin conditions (Table 1). Plant medicines were processed either using single species or as mixtures of two or more species. The methods of preparation of the therapeutic materials sometimes varied from individual to individual (e.g., the same plant material for the same ailment could be prepared in different ways, depending upon the preferences of different healers). In most cases, water was

the solvent employed in preparation of the remedy. Besides plants and water, some other materials were also commonly incorporated in the preparations: salt, jaggery, milk, oil and ghee. During the period of investigation, it was found that besides traditional herbal healers, some elderly person (age group 50-70 years) both man and woman in the villages had sound knowledge and understanding about medicinal use of some plants, especially those species which are often used for curing

common diseases like fever, pneumonia, bloat, poisoning, cough, wounds, cuts etc. The younger generation (age group 30-40 years), though poor in knowledge of medicinal plants, still faith in the efficacy of herbal system of treatments for curing animal ailments. In the present study different preparation methods of ethnoveterinary medicine were used such as grinding, crushing and squeezing, drying and immediate use of the ethnoveterinary traditional medicinal plants.

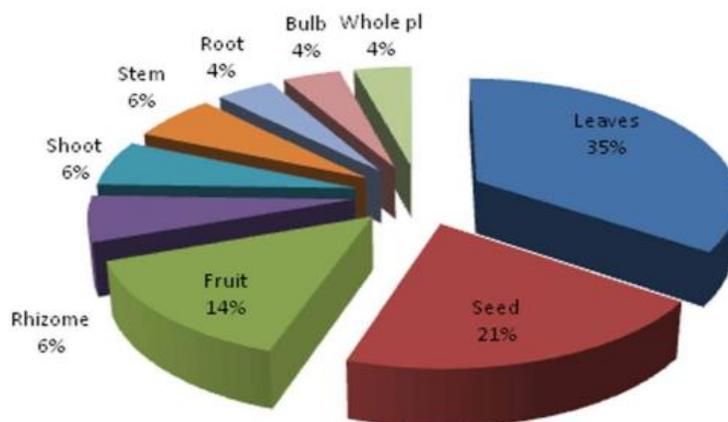


FIGURE 7: Percentage of medicinal plant parts used

DISCUSSION

Indigenous people throughout the world in different geographical regions utilize medicinal plants growing in their surrounding localities for treating different human ailments and their domestic animals. Ethnoveterinary is a holistic inter-disciplinary study of indigenous knowledge and associated skills, practices, beliefs and social structures pertaining to the healthcare husbandry income producing animals, has emerged as a fertile field for generation and transfer appropriate and sustainable veterinary alternatives to the stock raisers. Prolonged use of synthetic drugs commonly used in conventional system of medicine, their associated side effects as well as the uncertainty concerning their safety has paved a way towards an era of alternative system of medicine i.e. herbal medicine based on traditional knowledge. Some of the oldest known medicinal systems of the world such as Ayurveda of Indus civilization, Arabian medicine, Chinese and Tibetan medicine and Kempo of Japanese are all based on plants. The market for herbal drugs has grown at impressive rate and people rely on herbal drugs is rising not only in developing countries but in developed nations too. In this context WHO^[18] cites as strategic goals the rediscovery of traditional medicine and its rational use, in part because of its lower cost and higher acceptability. In Kendrapara district, villagers, especially women, are closely linked and involved in livestock management activities. Women carry out most of the activities related to livestock production including cleaning, feeding, milking, care of new born and sick animals and they are often the first to notice signs of ill health in animals^[19]. The present report on the use of plants for ethnoveterinary medicinal purposes draws support from earlier studies in different countries of the world^[20-28]. Furthermore, various

workers have investigated ethnoveterinary activity of several herbal remedies used in different parts of India^[6-9].

^{29-35]} and have confirmed the potentials for *Allium sativum*, *Azadirachta indica*, *Asparagus recemosus*, *Centella asiatica*, *Cissampelos pareira*, *Mimosa pudica*, *Ricinus communis*, *Saccharum officinarum* and *Tinospora cordifolia*. Moreover, these reports differ in the parts of the plant used or in preparation and mode of use^[36]. The common use of herbs over other growth forms for medicinal purposes is due to better availability of these forms in the study area. Such an observation draws support from the studies of Nath and Choudhury^[5]; Phondani *et al.*^[35] and Manoj and Gupta^[9]. The preferential uses of leaves as part of the ethnoveterinary medicinal plants have also been confirmed in earlier studies^[6-8,29]. Such widespread harvesting of leaves is important for plant survival and continuity of valuable medicinal plants and has indications for sustainable plant utilization. Large use of whole plant and root threatens the survival of valuable medicinal plants. A sizeable number of the veterinary plant reports share commonalities with the folk medical practices used in traditional ethnomedicine for humans in the study sites. This overlap may be a reflection on transfers of local knowledge between the folk veterinary and the ethnomedical domains^[37]. Some species of medicinal plants of the district have become threatened or endangered. It is possibly due to the rapid change in socio-economic as well as socio-cultural status of the society wrought by industrialization, modern agricultural practices, modern education and invasion of western culture. As a consequence, the traditional knowledge in the field of ethnoveterinary medicine and practices is dwindling rapidly.

CONCLUSION

The present study contributes to preserve the world's human traditional experience. The studied population demonstrated more trust in ethnoveterinary medicine than the veterinary allopathic medicine due to easy acquisition and effectiveness of some native plants. Moreover, in the face of rising cost of western-style (modern) medicine providing modern medical healthcare particularly in developing countries is still a far reaching goal due to economic constraints. A search for new discovery and development of more efficacious drugs and to make use of the vast resources of indigenous phytotherapy which can provide useful alternatives to conventional health care is therefore, of utmost necessity. The reported species in this study may be used for the development of new, low-cost herbal formulations for the treatment of animals. There is an urgent need to formulate suitable conservation strategies for wildy growing phototherapeutics to overcome their depletion from natural resources.

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