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Research Article

PLANTS USED IN ETHNOVETERINARY PRACTICES BY SUGALIS OF KRISHNA DISTRICT, ANDHRA PRADESH, INDIA

B. Nageswara Rao Naik[1], Z. Vishnuvaradhan[2]
[1]Department of Environmental Sciences, Acharya Nagrjuna University, Guntur A.P., India
[2]Department of Botany & Microbiology, Acharya Nagrjuna University, Guntur A.P., India

Correspondence should be addressed to **B. Nageswara Rao Naik**

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ABSTRACT

The present study enumerated a total of 30 ethnoveterinary medicinal plant species used by Sugalis of Krishna district in Andhra Pradesh, India. This study gains prominence by the fact that such studies were not reported earlier from Krishna district. Nine Sugali villages (thands) constitute the present study area and information was elicited from tribal vaidyas (medical practitioners) and elderly people in the age group of 55-65 years. The 30 plant species belong to 19 different families and are used for the remedy of 10 livestock diseases. The findings of present study tally with the previous published reports in that the same plant species were used in the treatment of other veterinary ailments of livestock also. The medicinal use of these 30 plants species in conjecture with their similar utility reported earlier led to believe that the phytochemical screening of these plants would result in valuable active compounds of great veterinary significance.

KEY WORDS: Ethnoveterinary medicinal plants; Krishna District, Andhra Pradesh.

BACKGROUND

The use of plants as source of medicine has been developed into a tradition and being practiced since ancient times for prevention and treatment of several health ailments of man and his domestic animals. Such traditional medical practices are being still existed in the aboriginal communities because of their acceptability of the system as safe and efficient one with fewer side effects.

About 80% people in the developing countries use herbal medicines for primary health care. India being an agricultural country, the cattle and other livestock play a great role in its economy. In India, livestock constitute the main source of farm power, rural transport, manure, fuel, milk and meat (verma 2014). The livestock also forms a source of cash income to farmers and it requires to be protected from diseases. The age old ethnoveterinary knowledge of tribal vaidyas of our country is the best resource to be utilized to deal with livestock diseases. There is a lot of potential for such studies, in India since India happens to be one of the 12 mega biodiversity centres of the world with very rich flora. In the present study an attempt is made to collect information on ethnoveterinary medicial practices of sugalis tribe from Krishna district in Andhra Pradesh, India.

Study area: **Sugalis of Krishna district in AP**

On 2nd June 2014, Government of India created the Telangana State for the 11 districts of erstwhile Andhra Pradesh by which the latter now consists of 13 districts only. Krishna district is one of the 13 districts of A.P state and situated between 15° 43' and 17° 10' North latitude and 80° 00' and 81° 33' Eastern longitudes. It is bounded by Khammam district of Telangana state on the North, the Bay of Bengal on the South, Guntur and Nalgonda districts on the West and west Godavari district and Bay of Bengal on the East. According to 2011 census, the tribal population of Krishna district constitutes about 2.93% of the total population of Andhra Pradesh. Of the 33 tribes of Andhra Pradesh sugali tribe represents the largest and

relatively advanced tribe locally referred to as Lambadis or Banjaras or Sugalollu. The suffix 'Naik' and 'Bai' are commonly appear after the names of sugali men and women respectively. Banjara is their spoken language. Sugali women wear a variety of ornaments while the men wear headgear. The dwelling areas of the tribes are generally referred to as 'Thands'. Nine Sugali thandas of Konduru mandal in Krishna district that are selected for data collection in the present study include 1) Repudi Thanda 2) Kummarikunta Thanda 3) Gyama Thanda 4) Mansingh Thanda 5) Bharoth Thanda 6) Kesya Thanda 7) Pedda Thanda 8) Gopalapuram Thanda and 9) Golamandala Thanda. The sugali population of these hamlets ranges from 1000 to 1500 only. They depend mostly on livestock and agriculture. The type of livestock that these thandas maintain mainly belong to either sheep or goats (75%) or cattle (25%).

METHODOLOGY

In order to document the utilization of local medicinal plants for the ailments of livestock, a survey was carried in the study area during August 2016 to January 2017. The information was collected from the aged and experienced tribals in the age group of 55 to 72 years and also from traditional tribal medical practitioners who have the knowledge of ethnoveterinary medicines. One of the investigators of this research study (Mr. Nageswara Rao Naik) happens to hail from same social background and familiar with the local language (Banjara), frequent group discussions and interactions with the locals were made easy and to have their co-operation in eliciting the valuable information on plants of their areas. A structured questionnaire was used to elicit information from tribal people. Information such as the local name of the plant, plant parts used for curing livestock diseases, mode of administration and preparation of medicine were recorded. Field plant photographs were taken with a camera. The herbarium of specimens was prepared for the plants on which information in relation to their veterinary medical importance was gathered and deposited in the department of Environmental Sciences of Acharya Nagarjuna University. The botanical names of the medicinal plants thus collected were authentically identified along with their family name with the help of key provided in the different floras including Bentham and Hoocker. The final list of ethnoveterinary plants along with their common (vernacular) name, plant part used for the treatment of disease are provided in a tabular form.

RESULTS AND DISCUSSION

Jain (2016) reviewed the ethnoveterinary practices reported from India. There are a few research studies on tribal ethnoveterinary practices from different districts of Andhra Pradesh. Similarly such studies were also reported from some district of Telangana states that were prior to June 2014, in erstwhile A.P state (Reddy et al 1998, Sudhkar Reddy and Raju 2000, Murthy et al 2007).

Raja Reddy and Sudarsanam (1987) and Sudarsanam et al (1995) reported ethnoveterinary practise from Chittor and Rayalaseema area of Andhra Pradesh. Similar studies were made by Goud and pullaiah (1996), Reddy et al (1997) and Reddy and Raju (1999) from Kurnool, Cuddapa and Anantapur districts of A.P state respectively.

The ethnoveterinary practices in Vijayanagaram district, Eastern Ghats, Srikakulam district and East Godavari district were also reported by different research investigators (Misra and Anil kumar 2004; Lakshmi and Lakshmi Narayana 2005 Lakshmi Narayana and Narasimha Rao 2013, Murthy and Narashima Rao 2012; Suneetha et al 2012). So far there is no single research report on the ethnoveterinary practices from Krishna district of Andhra Pradesh. Hence The present attempts to report ethnoveterinary medicinal species used by sugalis of Krishna district in A.P.

The study revealed the use of 30 plant species by sugali tribe to treat more than 10 common ailments of livestock. The details of different ailments of livestock and plant species useful in the treatment are provided in the table-1.The 30 species belong to 19 families. The families such as Solanaceae and Euphorbiaceae were represented by 3 species each, followed by Asclepiadaceae, Asteraceae, Fabaceae,Moraceae and Caesalpinaceae each one is represented by two species while the other families were represented by one species each (Table-1).

Based on the nature of plant part used in the treatment leaves were used predominantly (59.38%) followed by whole plant (15.63%) and fruit (12.5%). The other plant parts such as flowers, roots, bark and latex were found to have been used in 3.1% cases only in the veterinary treatments. The plant photographs of a few medicinal plants of present study along with some tribal informants are also provided (Figs 1-10).

The plants of present study are observed to be used by the tribal people to treat include I) skin infection, II) eye infection, III) dysentery and diarrhoea, IV) foot & mouth disease , V) fevers, VI) indigestion & constipation, VII) cuts & wounds, VIII) foot-swelling, IX) Tumors & Vaginal infections and X) sores of livestock animals.

Table 2. Presents an additional ethnoveterinary importance of the same plant species, reported by earlier investigators from other district of AP and India According to present study and previous studies *Abrus precatorius* proved to be a highly useful plant in ethnoveterinary practices to treat bronchitis, wounds, yolk gall, swellings and Trypanosomiasis. Similarily *Azardichta indica* is also very useful in the treatment of ectoparasites, worms in stomach, cuts wounds and Trypanosomiasis. *Cassia fistula* is another plant found useful to cure several ethnoveterinary ailments such as fevers, indigestion, snake bite, cold and eye-infections.

Both in present study and previous studies some plants were found to have same therapeutic value it tends to believe that they possess principle or active compounds responsible for the therapy.

Based on the previous studies and present study, *Abutilon indicum* is an useful herb for treating diarrhoea and dysentry, *Annona reticulata* to treat wounds, *Moringa oleifera* and *Trianthema portulacastrum* to cure eye-infections, (Table-2).

Table 1: Ethano-Veterinary medicinal Plants

S.no	Btanical Name	Family	Local Name	Part Used	Uses
1	*Andrographis paniculata (Burm.f.) Wall.*	Acanthaceae	Nelavemu	Whole plant	Cure mouth diseases and kill the warms in stomach
2	*Acacia nilotica(L.) Del.*	Mimosaceae	Nallatumma	Leaf	Control loose motion
3	*Abrus precatorius L*	Fabaceae	Gurvinda	Root	Cure of wound and healing
4	*Abutilon indicum (L.) Sweet*	Malvaceae	Tuturubenda	Leaf	Control diarrhoea
5	*Azadirachta indica A. Juss.*	Meliaceae	Vepachettu	Leaf, Fruit	Cure foot swelling, control body heat and kill warms
6	*Acalypha indica*	Euphorbiacea	Kumpenta akku	Leaf	Cure skin disease
7	*Annona reticulata L.*	Annonaceae	Ramaphalam chettu	Leaf	Cure sores
8	*Cissus Quadrangularis L.*	Vitaceae	Nallaeru	Whole plant	Cure wounds
9	*Cocculus hirsutus*	Menispermaceae	Chepuru tega	Leaf	Cure skin disease
10	*Catharanthus roseus (L)*	Apocynaceae	Billa ganeru	Leaf	Cure skin diseases
11	*Cassia fistula L. Syn*	Caesalpiniaceae	Rela chettu	Leaf	Cure fever and indigestion
12	*Cassia siamea Lam. Syn*	Caesalpiniaceae	Tangadu	Leaf	Control body heat and cure fever
13	*Datura metal L.*	Solanaceae	Umetta	Leaf	Cure skin diseases
14	*Eclipta prostrate L.*	Asteraceae	Guntagalaraku	Leaf	Cure Sort, callous
15	*Euphorbia hirta L.*	Euphorbiaceae	pachiaku	Whole plant	Cure mouth diseases
16	*Elephantopus scaber(Linn.)*	Asteraceae	Nelamarri	Leaf	Control loose motion
17	*Ficus religiosa L.*	Moraceae	Ravi chettu	Leaf	Cure foot and mouth diseases
18	*Ficus benghalensis L.*	Moraceae	Marri chettu	Leaf, Fruit	Cure cuts and wounds
19	*Kalanchoe pinnata (L)*	Crassulaceae	Ranapala chettu	Leaf	Cure wounds and pains
20	*Limonia acidissima L.*	Rutaceae	Velaga chettu	Fruit	Cure constipation and control vomiting sensation
21	*Nicotiana tobaccum Linn.*	Solanaceae	Pogaku	Leaf	Cure foot and mouth diseases
22	*Moringa leifera*	Moringaceae	Munga chettu	Flower	Cure eye infection
23	*Oroxylum indicum(Linn.)*	Bignoniaceae	Nemali chettu	Bark	Cure foot wounds
24	*Phyllanthus nirurii L.*	Euphorbiaceae	Nelausiri	Whole plant	Cure dysentroy
25	*Pergulariadaemia (Forssk.)*	Asclepiadaceae	Juttupaku tega	Letx	Cure cuts
26	*Solanum surettense*	Solanaceae	Vagudu chettu	Fruit	Cure eye diseases
27	*Trianthema portulacastrum*	Aizoaceae	Billa kura akku	Whole plant	Cure eye diseases
28	*Tinosporacordifolia (Wild)*	Menispermaceae	Tippatega	Leaf	Cure vaginal infection, cuts ,wounds and fever
29	*Tephrosia purpurea (L)*	Fabaceae	Vempalli	Leaf	Cure tumour in the stomach
30	*Wattakaka volubilis (L.F.) Stapf.*	Asclepiadaceae	Bandiguraja	Leaf	Cure skin diseases,

Table.2: Ethnoveterinary medicinal profile of plant taxa that commonly represented both in the present study and previous research studies.

S.No	Botanical Name of plant	Ethanoveterinary use as reported in the present study	Ethanoveterinary use of the plant reported by previous studies
1	*Abrus precatorius L*	Root is used to treat wounds	I). Reddy and sudarsanam (1987): Seed powder mixed with table salt is useful in the treatment of ylkgall. Leaf paste along with garlic and pepper cures bronchitis. II).Selvaraju et al (2011): Leaf paste is used to treat wounds and swelling. III).Murthy and Narasimha Rao(2012): Seed extract is an effective medicine for Trypomosomiasis. IV).Lakshminaryana and Acacia nilotica Root paste is applied on wounds
2	*Abutilon indicum (L.) Sweet*	Leaf is used to cure diarrhoea	I).Selvaraju et al (2011): Leaf paste mixed with butter is given to cattle to cure dysentery.
3	*Acacia nilotica(L.) Del.*	Leaf paste controls loose motions in cattle	I). Murthy and Narasimha Rao(2012): Stem bark decoction cures intestinal problems. II).Rajkumar Verma (2014): The bark is useful to treat dysentery and diarrhoea of cattle. The extract of grounded flowers controls jaundice.
4	*Acalypha indica*	Leaf paste is applied to control skin diseases	I).Selvaraju et al (2011): Leaf paste and salt is used in the treatment of wounds.
5	*Andrographis paniculata (Burm.f.) Wall.*	Whole plant is used in the treatment of foot and mouth disease and also to kill warms in stomach	I). Reddy and Sudarsanam (1987): Whole plant crushed and mixed with salt is given for the treatment of foot and mouth disease. II).Selvaraju et al (2011): Whole plant decoction control fevers.
6	*Annona reticulata L.*	Leaf is used to treat wounds	I). Murthy and Narasimha Rao(2012): Leaf paste with mustard oil is given to cure wounds.
7	*Azadirachta indica A. Juss.*	Leaf and seed used to treat foot swelling and to control warms in stomach	I). Reddy and Sudarsanam (1987): Stem bark decoction with Aloevera and leaves of pergularia daemia cures fevers. Leaf paste is used to control ectoparasites. II).Selvaraju et al (2011): Seed oil is useful to cure wounds. III). Murthy and Narasimha Rao(2012): Leaf powder is used to control Trypanosomiasis. IV).Rajkumar Verma (2014): Bark of Azadirachta indica and Acacia nilotica is ground and applied to treat cuts and wounds.
8	*Cassia fistula L. Syn*	Leaf paste cures fever and indigestion	I). Reddy and Sudarsanam (1987): Leaf juice and cured is used to control dysentery. Powder made with seeds of the plant along with cumin seed and Aristolochia indica root is used as antidote for snake bite. II).Selvaraju et al (2011): Stem bark with garlic and pepper is given to treat fevers. III). Murthy and Narasimha Rao(2012): Gree fruits paste controls cold. IV)Lakshminaryana and Narasimha Rao (2013): Stem bark + pepper + leaf paste of Ocimum tenuifolium cure eye infections.
9	*Cocculus hirsutus*	Leaf paste cures skin diseases	I). Reddy and Sudarsanam (1987): Leaf paste with poppy seeds and methi cures urinary disorders. II). Murthy et al (2007): Leaf paste + sugar controls blood motions.

10	*Cissus Quadrangularis L.*	Whole plant is used to treat external wounds	I). Murthy et al (2007): Asthama is treated with stem paste mixed with chilli powder. II).Selvaraju et al (2011): Decoction of leaves + pepper + garlic is used to treat ephemeral fevers. III). Reddy and Sudarsanam (1987): Paste made with fresh stem + coconut oil + Mimosa pudica leaves is effective in promoting fertility.
11	*Datura metal L.*	Leaf paste is effective in controlling skin diseases	I). Reddy and Sudarsanam (1987): Leaf paste with jiggery is used for treatment of snake and insect bites. II).Selvaraju et al (2011): Roasted fruits are fed to control dysentery and cough.
12	*Eclipta prostrate L.*	Leaf is used to treat sores and wounds	I). Reddy and Sudarsanam (1987): Leaves grounded with green chillies and red gram into a paste and given to cattle to treat constipation.
13	*Ficus religiosa L.*	Leaf is used to cure foot and mouth disease	I). Reddy and Sudarsanam (1987): Stem bark decoction controls cough. II). Murthy and Narasimha Rao(2012): Paste made with bark and wheat flour is useful to treat small-pox.
14	*Moringa leifera*	Flowers are used to treat eye infections	I). Reddy and Sudarsanam (1987): Infusion of leaves and flowers mixed with table salt is given to treat anthrax and eye infections. II). Murthy and Narasimha Rao(2012): Paste of stem, seed and root is effective against Helmintosis.
15	*Phyllanthus nirurii L.*	Whole plant is used in the treatment of dysentery	I). Murthy and Narasimha Rao(2012): In the treatment of indigestion and wounds, leaf juice and root powder are used.
16	*Pergulariadaemia (Forssk.)*	Latex cures cuts and wounds	I). Reddy and sudarsanam (1987): Leaf juice with pepper and garlic are used to treat fevers and rheumatic arthritis. II).Selvaraju et al (2011): Leaf decoction controls fevers.
17	*Nicotiana tobaccum Linn.*	Leaf is used to in the treatment of foot and mouth disease	I). Murthy and Narasimha Rao(2012): Ectoparasites are treated with leaf decoction.
18	*Tephrosia purpurea (L)*	Leaf is used in the treatment of stomach tumours in livestock	I). Reddy and Sudarsanam (1987): Paste of leaves + green chillies + redgram is given to treat constipation in cattle.
19	*Tinosporacordifolia (Wild)*	Vaginal infections, cuts, wounds and fevers are treated with the leaf paste and decoction	I). Murthy and Narasimha Rao(2012): Decoction of leaf and stem are useful to improve immunity and to control fevers. II)Lakshminaryana and Narasimha Rao (2013): Plant is useful in the treatment of foot and mouth disease.
20	*Trianthema portulacastrum*	Whole plant is used in the treatment of eye - infections	I). Reddy and Sudarsanam (1987): Eye-infections are treated with leaf and root extracts.
21	*Wattakaka volubilis (L.F.) Stapf.*	Leaf paste cures skin diseases	I). Reddy and Sudarsanam (1987): Plant infusion with Aerva lanaties useful as galactogogue. II).Selvaraju et al (2011): Leaf paste with table salt cures swellings.

Wattakaka volubilis (L.F)staf

Acacia nilotica(L.)Del.

Eclipta prostrate L.

Annona reticulate L.

Cassia fistula L.syn

Cassia siamea Lam.syn

Solanumsurettense

Hill area of Krishna District

Author with Sugali Tribe

Author interacting with healer

CONCLUSION

The traditional medicinal practices are low cost one and are mostly without any side effects besides their acceptability by people through many generations. This knowledge has greater potential for discovery of new drugs and compounds useful in the treatment of many veterinary diseases. The ethnoveterinary property of plants species enumerated in the present study was also further verified and supported when cross checked with previous studies from other district in Andhra Pradesh. The ethnoveterinary practices of different tribes and in different districts of A.P and India conform to the above statement. The screening of these medicinal herbs for new bioactive compounds and a study of their effects through pre-clinical and chemical tests however becomes a very useful ethnomedicinal research.

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