

Ethno-veterinary plants used by the tribal of Dang, Gujarat

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गुजरात राज्य के डांग जिले में आदिवासियों के द्वारा लोक पारम्परिक पशुचिकित्सा में प्रयुक्त पौधे

विनोद मैना, रमेश कुमार एवं रवि प्रसाद

सारांश

प्रस्तुत शोध पत्र गुजरात राज्य के डांग जिले में आदिवासियों के द्वारा पशु चिकित्सा में पारम्परिक रूप से 16 पादप जातियों के औषधीय उपयोग से सम्बंधित है। डांग जिले में किये गये लोक वानस्पतिक अध्ययन के दौरान ज्ञात हुआ है कि 5 पादप जातियाँ घाव भरने में उपयोग में लाई जाती हैं, जिनमें 2 जातियाँ क्षुधावर्धक एवं जूओं के निवारण में जबकि 9 जातियाँ अन्य विकारों जैसे जनन क्षमता, सामान्य रूग्णता, गर्दन की चोट, दुग्धविकार, सूजन, गले के दर्द और विषाणु संक्रमण की रोकथाम के लिये उपयोग में लाई जाती हैं।

Abstract

The present paper deals in traditional veterinary medicinal uses of 16 plant species in Dang district of Gujarat. Ethno-botanical study in Dang District of Gujarat shows that, 5 species used in healing wounds, 2 each used as appetizer and removal of lice while 9 were used for other diseases like fertility, general illness, neck injuries, lactation, swellings, throat pain and viral infections.

Keywords: Dang, Ethno Botany, Gujarat, India, Veterinary Uses

INTRODUCTION

The Dang region is historically known as “Dandakaranya or Dandak Van” during the period of Ramayana. Dang is the southernmost district of Gujarat state situated between 20°33' – 21°5' N latitude and 73°27' – 73°57' E longitude with an area of c. 1,764 sq km, comprising mostly hilly tract covered with dense forest, The eastern part of the district is a part of Sahyadris. In the north it is bounded by Surat (Gujarat) and Dhule (Maharashtra), in east by Nasik (Maharashtra) and West by Valsad (Gujarat) districts. Ahwa is the district Head Quarter. The elevation of the district ranges from 675 m to 1,290 m above MSL. The main

rivers of the districts are Gira, Purna, Khapri and Ambika. The geology of this region is composed of Deccan Trap and soils found in the area are black rock outcrops shallow black, brown and alluvial soil of recent origin.

The area experiences a monsoon climate. However due to deforestation, the climate of the area shows a variation. Temperature varies from 21° to 35°C; June remains the hottest month while December and January remain the coldest months in a year. The mean relative humidity varies from 50 to 85% and the mean annual rainfall for the district is 1300–1900 mm per year. Due to good rainfall and perennial source of water, the region has thick and luxuriant vegetation.

The area is inhabited mainly by Bhil tribes' while the other tribes such as Gamit, Kokni, Varli and Kotwalia are found less in number. Their local dialects are Dangi or Konkani; however they are also familiar with Gujarati and Marathi. Each tribal group has their unique culture, and traditional uses of plant or plant products not only a part of their lifestyle but also a source of livelihood. It is to be emphasized here that the economy of the area is based upon forestry and agriculture; the bulk of commodities used day to day life is derived from forest.

A perusal of literature (Pal, 1980; Sebastian, 1984; Khanna & al., 1993; Senani & al., 2001; Jain & Srivastava, 2003; Mistry & al., 2003; Bandyopadhyay & Mukherjee, 2005; Kumar & Suman, 2009 a, b; Dey & De, 2010; Kathiriyaa & al., 2012; Saha & al., 2013; Gayakwad & al.,

2014; Yadav & al., 2014) have reported some medicinal plants from the district, however very limited reports are available for veterinary uses of plants. In the present paper, traditional veterinary uses of 16 common plants of Dang districts of Gujarat is enumerated with its correct name, voucher specimen number, and mode of uses.

MATERIALS AND METHODS

Ethno-botanical information were collected during routine floristic survey in the district of Dang. Information regarding the medicinal uses of plants, perception of local people regarding use of plants in veterinary diseases, was collected through questionnaire. Public perception regarding use of plants for common veterinary diseases

Table -1: People's perception regarding the effectiveness of the Ethno-veterinary plants used in the traditional therapy

Sl. No.	Plant name	Perception of the local herbal healer	Perception of the local tribal				Bhil	Plant part used	Used for the diseases in traditional therapy	Remarks
			Kotwalia	Varli	Gamit	Konkani (Kunbi)				
1	<i>Alternanthera ficoidea</i> (L.) Sm.	M	NK	NK	LE	E	M	Leaves	Wounds	-
2	<i>Arundo donax</i> L.	NK	NK	NK	M	LE	E	Rhizome, whole plant	Throat pain	-
3	<i>Baliospermum solanifolium</i> (Burm.) Suresh	NK	NK	NK	M	E	LE	Root	Remove larvae, wounds	*Seeds and roots used as purgative and in rheumatism. (CSIR, 1986)
4	<i>Cuscuta reflexa</i> Roxb.	M	NK	M	LE	E	E	Whole plant	Viral infections	Paste of plant along with roots of <i>Achyranthes aspera</i> is used for Bodyache. (Saha & al. 2014) *Plant used as purgative and seeds as diaphoretic, demulcent and tonic. (CSIR, 1986) And also used as galactagogue after delivery. (Bandyopadhyay & Mukherjee. 2005)
5	<i>Erythrina variegata</i> L.	NK	M	NK	NK	E	LE	Leaves	Swelling	Leaves used as cattle fodder consider laxative, diuretic, anthelmintic, galactagogue and emmenagogue. (CSIR, 1986)
6	<i>Ficus arnottiana</i> (Miq.) Miq.	NK	NK	M	LE	E	E	Whole plant	Lactation	Leaves and bark used in cutaneous affections. Leaves lopped for fodder. (CSIR, 1986)

7	<i>Gloriosa superba</i> L.	E	NK	NK	E	E	E	Whole plant	Remove lice	Root used in small pox, galaklatki, dangapila of cattles. (Dey & De. 2010) *Used in gout and rheumatism and also to induce polyploidy. (CSIR, 1986)
8	<i>Indigofera linifolia</i> (L.f.) Retz.var. <i>linifolia</i>	E	NK	LE	M	E	E	Leaves	Wounds	*Used in febrile eruptions, also considered a vermifuge. (CSIR, 1986)
9	<i>Mallotus polycarpus</i> (Benth.) Kulju & welzen	E	NK	M	LE	E	E	Fruit	Neck and shoulder injury caused during plough or pulling bullock cart.	-
10	<i>Martynia annua</i> L.	M	NK	M	LE	M	E	Leaves	Remove lice	*Leaves used for epilepsy and applied to tubercular gland of the neck; juice as gargle for sore throat and fruit for inflammation. (CSIR, 1986)
11	<i>Momordica charantia</i> L.	M	NK	NK	LE	M	E	Leaves	Wounds	*Fruits used in rheumatism, gout, liver and spleen affections and also for diabetes. Juice of leaves in bilious affections and roots for hemorrhoids. (CSIR, 1986)
12	<i>Pongamia pinnata</i> (L.) pierre	M	NK	NK	M	LE	M	Seeds	General illness	Lopped leaves used as fodder for galactagogue. (CSIR, 1986) *Juice of leaves used in flatulence, dyspepsia, diarrhea, cough, leprosy and gonorrhea. Bark decoction for piles and beri-beri. (CSIR, 1986)
13	<i>Pueraria tuberosa</i> (Roxb.) DC	NK	NK	NK	LE	M	E	Leaves, tuber	Fertility (to conceive)	Leaves used as fodder for horses and cattle. Roots demulcent and refrigerant also used as cataplasm on swollen joints and as lactagogue. (CSIR, 1986)
14	<i>Sida glabra</i> Mill.	M	NK	NK	LE	E	M	Whole plant	Appetizer	*Powdered seeds are mixed with jiggery and given in lumbago. (CSIR, 1986)

(Continued)

15	<i>Sida rhombifolia</i> L.	E	NK	M	M	E	E	Leaves	Wound	*Used in rheumatism and tuberculosis. Stem used as diuretic and febrifuge and in skin problems. (CSIR, 1986)
16	<i>Sida spinosa</i> L.	E	LE	LE	M	E	M	Whole plant	Appetizer	*Root tonic and diaphoretic used in debility, fever and gonorrhoea. (CSIR, 1986)

Abbreviations: E: Effective; LE: Less effective; M: Moderate; NK: Not known.

Uses marked with (*) are applied in cases of human and incorporated here on the basis of literature available which are administered by different local people/tribal of India.



Plate-1. A. Top view of Dry deciduous forest of Dang; B. Dangi lady along with her cattles; C. Field interaction with tribals; D. *Ficus arnottiana* (Miq.) Miq.; E. *Cuscuta reflexa* Roxb.; F. *Erythrina variegata* L.



Plate-2. A. *Arundo donax* L.; B. *Gloriosa superba* L.; C. *Martynia annua* L.; D. *Pongamia pinnata* (L.) Pierre; E. *Mallotus polycarpus* (Benth.) Kulju & Welzen; F. *Baliospermum solanifolium* (Burm.) Suresh; G. *Indigofera linifolia* (L.f.) Retz.var. *linifolia*

was classified as effective, moderate, less effective, depending on the response of the users to that disease. Later, the data were cross-checked with the local herbal and a general conclusion was derived. The current name of the plants are appended here alphabetically followed by a family name, local name (L.N.) in parenthesis, habit, place of collection in Dang, GPS coordination, collector and vouchers specimen number and mode use of the plant.

ENUMERATION OF PLANTS USED IN VETERINARY USES

Alternanthera ficoidea (L.) Sm. (Amaranthaceae), (L. N. Sonaru & Kataran)

Perennial herb. Kushmal, 20° 51' 19.1"N & 73° 32' 15.7"E, 10.02.2013, Vinod Maina 28823.

Leaves paste are applied to cure wounds.

Arundo donax L. (Poaceae), (L.N. Bara nal)

Tall grass; Bhond Vahir, 20° 55' 00.1"N & 73° 52' 05.3"E, 12.10.2014, Vinod Maina 29693. Crushed rhizomes mixed with water given orally or chopped whole plant mixed with fodder administered to cure throat pain.

Baliospermum solanifolium (Burm.) Suresh (Euphorbiaceae) (L. N. Baktumbo)

Under shrub; Kushmal, 20° 52' 29.6"N & 73° 33' 14.5"E, 10.02.2013, Vinod Maina 28805.

It is believed larvae can expel from body by tying root of plant on neck and also to cure neck wounds.

Cuscuta reflexa Roxb. (Convolvulaceae) (L. N. Amerbel, Payor)

Parasitic greenish-yellow twiners; Dhuldha forest, 20°57'53.6"N & 73°39'55.6"E, 10.03.2015, *Vinod Maina* 29733. Whole plant soaked in water and allows chicks to drink to cure or control viral infections.

Erythrina variegata L. (Fabaceae) (L. N. Pangara)

Tree up to 6 m tall; Kalibel forest, 20°55'19.5"N & 73°34'47.8"E, 10.02.2013, *Vinod Maina* 28821. Leaves ash is applied on neck to cure swelling.

Ficus arnottiana (Miq.) Miq. (Moraceae), (L. N. Khadak Payara)

Tree; Piplai Devi forest (Hindra road), 20°48'56.3"N & 73°48'35.6"E, 28.08.2012, *Vinod Maina* 28859. Milky latex of plant mixed with water in Nagali (*Eleusine coracana*) flour is given to increase lactation.

These groups constituted the nucleus of the present study. et al. ethno-botanical Specimen examined: Dang; Vinod Maina

Gloriosa superba L. (Liliaceae), (L. N. Kalkuti)

Herbaceous climber; Bheskatri forest, 20°48'38.3"N & 73°44'54.0"E, 04.10.2014, *Vinod Maina* 29559. Chopped whole plant mixed with fodder administered for removing lice.

Indigofera linifolia (L.f.) Retz. var. **linifolia** (Fabaceae), (L. N. Kali Hirni & Kali Jhilani)

Prostrate herb. Bheskatri forest, 20°56'25.6"N & 73°32'02.2"E, 12.10.2014, *Vinod Maina* 29694.

Leaves paste may be applied or leaves can be rubbed on wounds followed by bath to cure them.

Mallotus polycarpus (Benth.) Kulju & Welzen (Euphorbiaceae), (L. N. Karam Bad)

Tree, 10–20 m tall; Bhonga Nimadi, 20°47'42.1"N & 73°43'45.8"E, 13.02.2013, *Vinod Maina* 28874. Fruit pulp is applied on neck and shoulder to cure the injury caused during plough land or pulling bullock cart.

Martynia annua L. (Pedaliaceae), (L. N. Jun-bela, Vinchudo)

Tall Herb Near Bheskatri, 20°56'21.9"N & 73°33'31.4"E, 06.10.2014, *Vinod Maina* 29589.

Pounded leaves are applied on the body to remove lice.

Momordica charantia L. (Curcubitaceae), (L. N. Karel & Karela)

Climbing herb. Khokhari village (Vardipada), 20°38'33.3"N & 73°46'39.8"E, 06.09.2012, *Vinod Maina* 28768. Juice of fresh leaves or powder of shaded dried leaves are applied on wounds to heal up.

Pongamia pinnata (L.) Pierre (Fabaceae), (L. N. Karanj & Kanaj)

Tree; Purna Wildlife Sanctuary, 20°42'33.2"N & 73°32'47.4"E, 21.01.2013, *Vinod Maina* 29498.

Decoction of seeds are given to cure general illness.

Pueraria tuberosa (Roxb.) DC (Fabaceae), (L. N. Ghud-Bedar)

Twiner; Bhonga Nimadi, 20°47'42.1"N & 73°43'45.8"E, 31.08.2012, *Vinod Maina* 28683.

Leaves and tuber have cooling effect and given to mare as fodder to conceive.

Sida glabra Mill. (Malvaceae), (L. N. Chiknibala)

Erect herb; Bheskatri forest, 20°46'25.6"N & 73°32'02.2"E, 22.01.2014, *Vinod Maina* 29123.

Chopped whole plant mixed with fodder, administered as appetizer to cure indigestion.

Sida rhombifolia L. (Malvaceae), (L. N. Bala)

Shrub; Vardipada forest, 20°58'36.4"N & 73°37'14.8"E, 03.10.2014, *Vinod Maina* 29542.

Leaf paste is applied on wounds and tied up with cotton clothes for quick healing.

Sida spinosa L. (Malvaceae), (L. N. Kantalobala)

Shrub; Khokhari village (Vardipada), 20°38'33.3"N & 73°46'39.8"E, 06.09.2012, *Vinod Maina* 28772.

Chopped whole plant mixed with fodder, administered as appetizer to cure indigestion.

DISCUSSION

The present study describes medicinal uses of 16 taxa for 11 different diseases. The study shows that Bhil and Konkani (Kunbi) tribe are more familiar regarding veterinary uses in comparison to Gamit, Varli and Kotwalia respectively. The perception of local people about effectiveness of plants shows that 4 plants very effectively, 3 effectively and 9 are moderately used by majority of tribes of the area (Table -1). Uses of 11 plants are known to herbal healers. It is interesting to note that, the same plant is used for different such as *Cuscuta reflexa* used in viral infection,

as galactogue after delivery; *Erythrina variegata* in swellings, cattle fodder, laxative, diuretic, anthelmintic, galactagogue and emmenagogue; *Ficus arnottiana* in lactation, cutaneous affections and as fodder; *Gloriosa superba* for removal of lice, in small pox, galakarki, dangapila of cattles; *Pongamia pinnata* in general illness and as fodder for galactagogue and *Pueraria tuberosa* in fertility (to conceive), as demulcent, refrigerant and as cataplasm on swollen joints and as fodder for lactagogue.

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REFERENCES

- BANDYOPADHYAY, S. AND S. K. MUKHERJEE. 2005. Ethnoveterinary medicine from Koch Bihar district, West Bengal. *Indian J. Tradit. Knowl.* 4(4): 456–561.
- DEY, A. AND J. N. DE. 2010. Ethnoveterinary uses of medicinal plants by aboriginals of Purulia district, West Bengal, India. *Int. J. Bot* 6: 433–440.
- GAYAKVAD, P., D. B. JADEJA, B. THAKRE, S. BHALAWE AND D. NAYAK. 2014. Ethno-veterinary medicinal plants of mahal village of dang district, Gujarat, India. *Res. Environ. Life Sci* 7(2): 99–100.
- JADEJA, B. A., N. K. ODEDRA, K. M. SOLANKI AND N. M. BARAIYA. 2006. Indigenous animal healthcare practices in district Porbandar, Gujarat. *Indian J. Tradit. Knowl.* 5(2): 253–258.
- JAIN, S. K. AND S. SRIVASTAVA. 2003. Some folk herbal medicines for possible use in veterinary practices. *J. Tradit. Knowl.* 2(2): 118–125.
- KATHIRIYA, S. V., V. DURGGA RANI AND H. U. VYAS. 2012. Ethnoveterinary practices associated with animal healthcare in Dang district of south Gujarat, India. *Int. J. Appl. Biol. Pharm.* 3(1): 91–95.
- KHANNA, K. K., P. K. SRIVASTAVA, G. SHUKLA AND V. MUDGAL. 1993. Unknown traditional uses of plants as veterinary medicines from Uttar Pradesh, India. *Proc. Nat. Acad. Sci., India* 63(B) IV: 407–411.
- KUMAR, R. AND N. R. SUMAN. 2009a. Floristic diversity of Panna National Park, M.P. *J. Econ. Taxon Bot* 33(4): 846–868.
- KUMAR, R. AND N. R. SUMAN. 2009b. Plant wealth of Ken Ghariyal Sanctuary, M. P. *J. Econ. Taxon Bot* 33(3): 663–672.
- MISTRY, N., C. S. SILORI, L. GUPTA AND A. M. DIXIT. 2003. Indigenous knowledge on animal healthcare practices in district Kachchh, Gujarat. *Indian J. Tradit. Knowl.* 2(3): 240–254.
- PAL, D. C. 1980. Observations on Folklore about plants used in Veterinary Medicine in Bengal, Orissa and Bihar. *Bull. Bot. Surv. India* 22(1-4): 96–99.
- SAHA, M. R., D. DE SARKAR AND A. SEN. 2013. Ethnoveterinary practices among the tribal community of Malda district of West Bengal, India. *Indian J. Tradit. Knowl.* 13(2): 359–367.
- SEBASTIAN, K. MATHEW. 1984. Plants used as Veterinary Medicine, Galactagogues and fodder in the forest areas of Rajasthan. *J. Econ. Tax. Bot* 5(4): 785–788.
- SENANI, S., D. BHARTI AND V. MAINA. 2001. Plant biodiversity and Ethnoveterinary medicine in A & N Islands. *J. Andaman Science Association* 17(1&2): 202.
- YADAV, S. S., R.K. BHUKAL, M.S. BHANDORIA, S.A. GANIE, S.K. GULIA AND T.B.S. RAGHAV. 2014. Ethnoveterinary Medicinal plants of Tosham block of district Bhiwani (Haryana) *J. Appl. Pharm. Sci.* 4(6): 40–48.