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Plant based medicines to treat various ailments in domestic animals - A case study

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Abstract

The aim of this study was to examine the potential use of plant based medicines used to cure various ailments in domestic animals of Gujarat. Interviews and observation were the means of data collection. The paper contains comprehensive narration of plant based medicines to cure various diseases and disorders in domestic animals used by several ethnic groups residing in the periphery of the forests of Gujarat state. Every practice mentioned here contains scientific name, common local names, plant part used, and the district from where the practice is reported along with the detailed modes of administration. The study revealed 62 plant species used to cure various ailments in domestic animals.

Keywords: Plant based medicines, ailments, domestic animals, ethnic groups, Gujarat

Introduction

The affiliation between plants and Man is older than the history of mankind. In this affiliation, Man has used plants to fulfill his needs like food, medicine, clothes etc. In all these needs food and medicine have been the most vital for Man. To fulfill these needs animals have played an important role and so the affiliation between animals and man is also as old as with the plants. Knowledge of medicinal plants and mode of administration is learned by the try and error practices^[1]. By the time this knowledge evolved with experience over an era, which is known as Indigenous Knowledge (IK). But this IK is unique in every particular geographical region and varies with the local flora, local diseases, interaction and interfacing of different communities. Apart from all the modern medical systems, man is still reliant on plants for medicine for both himself and his domesticated animals^[2]. The percentage of such dependency is higher in and around the forest areas where the major populations are of the forest dwellers.

Study area

Gujarat is situated on the west coast of India, covering an area of 1, 96, 024 sq km which is 5.96 % of India's total area. It lies between 20° 06' to 24° 42' latitude, and 68° 10' to 74° 28' longitude. Gujarat has very diverse vegetation due to the varied climatic conditions of different regions. The northern part of the state is basically a semi-arid zone mostly consists of scrub forests, the little desert of Kutch is also a semi-arid zone but some parts of that region are wetlands. Forests of Central Gujarat are dry deciduous. South Gujarat is known for dense moist deciduous forests. Almost 14% of the total population of the state falls under scheduled cast and are part of tribal groups like Bhil, Garasiya, Vasava, Koli, Dubla, Kharva, Nayakda, Gamit, Varli, Konkana, Kunbi, Rathva, Vasava, Halpati, Dhanka etc. All these ethnic groups are outstandingly expert of living in harmony with their surrounding nature and possess great knowledge^[3]. They are mostly inhabitants of Banaskantha, Sabarkantha, Panchmahal, Dahod, Vadodara, Narmada, Surat, Tapi, Valsad and Dang. Dang has the highest population of *Bhils*^[4].

Methodology

The present study covers the tribal belt of Gujarat state. The maximum population of the area is rural with agriculture as their major occupation. Community leaders, elderly persons (men and women) of the villages and local traditional healers (*Bhagat*) are interviewed through meeting while collecting information^[5]. Household surveys are also conducted randomly to document knowledge of plant names, use of plants, availability and method of administration, preference of plants for certain use etc. Interaction during the interviews are carried out in

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native local language in order to minimize biased information and make it easy to understand and to administer for the interviewer and interviewee as well as is encourages spontaneous Participation. To collect large amount of information, field visits were done with local traditional healers. The collected herbs were identified up to species level and were submitted to the Department of Botany, University School of Sciences, and Gujarat University. A number of

floras were used for the identification of the plants reported during study [6-8].

The data presented in here includes the scientific name of plant species, common local names, plant parts used and the name of disease or disorder along with the mode of administration. It also includes name of the district from where the practice is reported. The data are presented in alphabetical order (Table: 1).

Table 1: The plant species reported during the study with their detailed mode of administration

No.	Plant name	Common name	Plant part used	Ailment	Place	Mode of administration
1	<i>Abrus precatorius</i> L	Chanothi	S	Placental expulsion	Junagadh	Feed 12 – 15 seeds for placental expulsion.
2	<i>Abutilon indicum</i> (L) Sw	Kanski	Wh	Placental expulsion	Junagadh	Almost 500gm fresh plant is fed to an animal for placental expulsion
3	<i>Acacia nilotica</i> (L) Del	Desi Baval	Lf, Ft	Tympanites	Kutch	Take some fresh leaves and pods (\approx 250gm) and crush with water (\approx 100ml). Feed to the affected animal.
4	<i>Achyranthes aspera</i> L var <i>aspera</i>	Aghado	Rt	Placental expulsion	Narmda	Almost 500gm fresh roots are fed to an animal for placental expulsion.
5	<i>Aegle marmelos</i> (L) Corr	Bili	Ft	Fracture	Sabarkantha, Banaskantha	Take pulp of around 10 mature fruits. Mash and make fine paste. Apply paste on a wet cloth. Set the fractured bone and tightly bind the cloth. Cover with several layers of clothe with paste and let it dry. Leave the bandage for 5 – 6 weeks.
6	<i>Ailanthus excelsa</i> Roxb	Arduso	Bk	Diarrhea	Sabarkantha, Kutch, Panchmahal	Take around 1kg fresh bark, pound and collect juice. Soak the crushed bark in around 2 liter of water if the juice is less in quantity. Squeeze the matter and collect water. Feed extract to the grieving animal.
7	<i>Allium cepa</i> L	Dungari	B	Colic	Sabarkantha, Dahod, Banaskantha, Dang, Panchmahal, Kutch, Junagadh	Take 3 – 5 bulbs and mix with almost 250ml butter milk. Feed to the affected buffalo.
8	<i>Ammannia baccifera</i> L	Jal Aagio	Wh	Diarrhea in calf	Vadodara	Feed almost 500gm fresh plant. Repeat the same next day if any positive signs are not seen.
9	<i>Annona squamosa</i> L	Sitafal	Lf	Maggots in injured hoof	Junagadh, Panchmaha, Sabarkantha, Banaskantha, Dang	Take around 100gm fresh leaves and crush to make fine paste. Add some water (\approx 10ml) if necessary. Apply on the injured hoof and cover with cotton cloth.
10	<i>Areca catechu</i>	Supari	S	Tympanites	Junagadh, Sabarkantha	Take 2 betel nuts and crush. Mix well with powdered caraway (\approx 50gm), Black pepper (\approx 10gm) and around 20gm of dry Ginger in any cooking oil (\approx 500ml). Feed to the animal.
11	<i>Aristolochia bracteata</i> Retz	Kidamari	Ft	Hoof injury	Vadodara, Valsad, Narmada	4 – 5 tender fruits are crushed to fine paste. Apply on the injured hoof.
12	<i>Asparagus racemosus</i> Willd	Henha Jhad, Hatavari	Rt	Arthritis	Sabarkantha, Kutch	Take 2–3kg fresh roots and wash to remove soil. Feed to the animal.
13	<i>Balanites aegyptiaca</i> (L) Del	Ingorio	Bk	Wall-eye	Sabarkantha	Take a small piece of fresh bark, crush and make fine paste. Gently apply to the affected eye of an animal. Repeat for 4 to 5 days.
14	<i>Bauhinia racemosa</i> Lam	Asitro, Jenhji	Bk	Diarrhea	Sabarkantha	Take some fresh bark. Pound and dilute in water (\approx 500ml). Feed to the animal. Repeat for 3 days.
15	<i>Bombax ceiba</i> L	Hemlo	Bk	Tympanites	Junagadh	Take some fresh bark (\approx 250gm) and crush with water (\approx 100ml). Feed to the affected animal.
				Placental expulsion	Junagadh	Take around 500gm of fresh bark and crush gently with water (\approx 1 liter). Boil for 15mins and feed to the affected animal along with water.
16	<i>Butea monosperma</i> Lam	Khakharo	G	Placental expulsion	Sabarkantha, Junagadh, Panchmahal	Take around 2kg <i>Khakhara</i> gum and grind it. Feed around 250gm every day for 8 days. Same result can also be achieved with flowers. Feed around 250gm of dry flowers.

No.	Plant name	Common name	Plant part used	Ailment	Place	Mode of administration
17	<i>Caesalpinia crista</i> L	Kantol, Kocha	Lf	Diarrhea	Banaskantha, Sabarkantha	Take around 1kg of fresh leaves. Pound and collect juice. Feed to the animal.
18	<i>Calotropis procera</i> (Ait) R Br	Aakdo	Fl	Cold	Dahod, Kutch	Take 20 – 30 flowers, crush and feed to camel to cure cold.
			Tw	Mouth ulcer	Junagadh, Kutch	Take 2 – 3 fresh tender branches. Make the cattle chew it and then rub these branches on tongue of the animal.
19	<i>Capparis decidua</i> (Forsk) Edgew	Kegarli, Kerdo	Sh	Indigestion	Sabarkantha, Kutch, Junagadh	Take 20 – 30 young shoots and crush them. Add turmeric powder (\approx 20gm) and salt (\approx 15gm) and feed to cattle to increase its appetite.
20	<i>Cassia auriculata</i> L	Aaval	Wh	Placental expulsion	Junagadh	Feed almost 1kg fresh plant for placental expulsion.
21	<i>Cayratia carnosa</i> (Lam) Gagnep	Khat Khatumbo	Wh	Constipation	Sabarkantha, Banaskantha, Kutch	Take around 250gm plant and crush in water (\approx 1 liter). Feed to the animal. Repeat if required.
22	<i>Citrus medica</i>	Bijoru	Ft	If an animal gulps some iron article	Sabarkantha	Take 2–3 mature fruits and feed with around 200gm bark of <i>Tecomella undulate</i> (Sm) Seem.
23	<i>Commiphora wightii</i> (Arn) Bhandari	Gugal	Rt	Tympanites	Valsad	Feed some (\approx 100gm) fresh roots to the affected animal.
24	<i>Cucumis prophetarum</i> L	Vakh Dedo	Ft	Maggots	Kutch	Take few ripe fruits and crush to fine paste. Apply on the body part infested with maggots.
25	<i>Curcuma inodora</i> Blatter	Pichrun	Rh	Stomach ache	Valsad	Take around 250gm fresh rhizome and wash to remove soil. Feed to the affected animal.
26	<i>Dalbergia sissoo</i> Roxb	Sisoo	Lf	Cold	Junagadh	Take almost 500gm fresh green leaves. Sprinkle some water on it. Burn these leaves on intensely burning coals which makes intense fume. Make the animal inhale the smoke for 15mins.
27	<i>Dendrocalamus strictus</i> (Nees)	Manvel Vaans	Lf	Placental expulsion	Sabarkantha, Dang	Feed around 5kg of fresh green leaves to the affected animal.
28	<i>Enicostemma hyssopifolium</i> (Willd) Vadoon	Mamejavo	Wh	Placental expulsion	Junagadh	Feed almost 1kg whole plant.
29	<i>Euphorbia nivulia</i> Buch-Ham	Vaad Thor	St	Mastitis	Kutch, Junagadh	Take some pieces of stems and dry them. Burn these dry stems. The fumes are concentrated to the udder for around 10 minutes. Repeat till perfectly cured.
30	<i>Ficus arnottiana</i> Miq	Khadak Payro	L	Lactation	Dang, Banaskantha	1 cup of latex is given to the animal. For best result, allow the cattle to stay in full sunlight.
31	<i>Holostemma annularium</i> (Roxb) K Schum	Moti Dodi	Lf	Mouth ulcer	Vadodara, Narmada, Junagadh	Take almost 1kg of fresh leaves and crush them gently. Cover it with any grass or other fodder and make the animal chew it. Repeat the same till it is cured completely.
32	<i>Lannea coromandelica</i> (Houtt) Herrill	Moyno	Bk	Fracture	Valsad	Take around 1kg fresh bark and boil in water (\approx 2 liter). When reduced to almost 1.5 liter, decoction is given to the animal. Feed the boiled bark too.
33	<i>Lepidium sativum</i> L	Aseliyo	S	Placental expulsion	Junagadh, Kutch	Feed almost 500gm seeds followed by around 5liter lukewarm water.
34	<i>Madhuca indica</i> J F Gmail	Mahudo	Ft	Placental expulsion	Sabarkantha, Junagadh	Around 1kg of dry fruits is soaked in water (\approx 2liter) for three hours. Feed to the animal.
				Bruises	Sabarkantha	Around 250gm dry fruits soaked in water (\approx 1liter) for 3 hours and add some alum (\approx 50gm). Feed to the animal.
35	<i>Mitragyna parvifolia</i> (Roxb) Korth	Keblo	Bk	Colic	Sabarkantha, Banaskantha, Panchmahal, Dang	Take around 250gm fresh bark. Pound with water (\approx 1 liter). Feed with water to the cattle.
36	<i>Mucuna pruriens</i> Baker	Kuves	S	Worms	Kutch, Junagadh	Take around 200gm seeds and crush in water (\approx 500ml). Feed to the animal (infested with tape worms) for five days.
37	<i>Musa paradisiaca</i> L	Kel	Ft	Mastitis	Kutch	Take banana and split into two parts. Add 15–20gm turmeric powder, 6–8gm salt and some alum. Feed 4 times for 3 days to cattle for any udder disease.

No.	Plant name	Common name	Plant part used	Ailment	Place	Mode of administration
			As	Placental expulsion	Kutch	Take apical shoot of the plant. Pound and collect juice. Feed filtered juice ($\approx 250\text{ml/day}$) for 4 days.
38	<i>Neuracanthus sphaerostachyus</i> (Nees) Dalz	Gothio	If	Stomach problem	Sabarkantha, Banaskantha, Panchmahal, Dahod	Take 5 – 6 inflorescences, dry and crush to fine powder. Feed to the unwell animal. Repeat till cured completely.
39	<i>Ocimum canum</i> Sims	Baavchi	S	Placental expulsion	Sabarkantha, Junagadh	Take around 100gm seeds and crush in water ($\approx 500\text{ml}$). Feed to the animal and repeat the same after two hours if not seen any positive result by then.
40	<i>Opuntia elatior</i> Mill	Phafda Thor	L	Cattle lice	Dang, Junagadh, Kutch, Sabarkantha	Cut young stems. Collect latex and apply on Lice.
41	<i>Pennisetum typhoides</i> (Burm f) Stapf & Hubb	Bajri	S	Coryza	Junagadh	Take some flour ($\approx 300\text{gm}$) and add red chilly powder garlic and onion ($\approx 50\text{gm}$ each). Mix well and feed to the animal.
42	<i>Pergularia daemia</i> (Forsk) Chiov	Chamar Dudheli	Lf	Glaucoma	Kutch, Sabarkantha, Junagadh	Take 3 – 5 leaves and pound. Anoint in eyes to cure glaucoma.
43	<i>Phoenix sylvestris</i> (L) Roxb	Khajuri	Ft	Sickness	Kutch, Sabarkantha	Take 40 – 45 fruits and add jeggary ($\approx 250\text{gm}$) and some alum ($\approx 25\text{gm}$). Mix well with warm water. Feed to the sick/ill cows.
44	<i>Pimpinella tomentosa</i> Dalz	Jungali Jiru	Wh	Hoof injury	Vadodara, Narmada	Take plant ($\approx 100\text{gm}$) and wash with water. Boil ($\approx 1\text{liter}$) and decoction when reduced to half ($\approx 500\text{ml}$) is taken in a cotton cloth and tied on the injured hoof of the affected animal. Repeat till cured completely.
45	<i>Piper nigrum</i> L	Mari	Ft	Tympanites	Sabarkantha	Take around 10gm black pepper powder. Mix this well with powdered caraway ($\approx 50\text{gm}$), 2 betel nuts and around 20gm dry ginger in any cooking oil ($\approx 500\text{ml}$). Feed to the animal.
46	<i>Prosopis cineraria</i> (L)	Khijado	Bk	Mouth ulcer	Kutch	Take some fresh bark. Make the cattle chew it and then rub these barks on tongue of the animal.
47	<i>Solena heterophylla</i> Lour	Gometh	Rt	Lactation	Dang	Fresh piece of root ($\approx 150\text{gm}$) are cleaned, peeled and crushed in water ($\approx 500\text{ml}$). Let the animal drink. For best result let the animal be in full sun light.
48	<i>Streblus asper</i> Lour	Datirva	Lf	Stomach problems	Dang, Valsad	Feed almost 2kg of fresh leaves.
49	<i>Striga gesnerioides</i> (Willd) Vatke	Ratodo	Wh	Placental expulsion	Sabarkantha, Junagadh	Feed almost 1kg fresh plant.
50	<i>Syzygium aromaticum</i> Linn	Laving	Bd	Mastitis	Junagadh	Take one <i>Laving</i> . Chip to make it thin. Insert this chipped piece of <i>Laving</i> in the udder. Keep it as it is till cured entirely.
51	<i>Tecomella undulata</i> (Sm) Seem	Ragat Rohido	Bk	Colic	Panchmahal, Dahod, Sabarkantha	Take around 250gm of whole plant. Crush and feed to the animal.
				If an animal gulps some iron article	Sabarkantha	Take 2 – 3 mature fruits of <i>Citrus medica</i> L. Feed with around 200gm fresh bark of <i>Tecomella undulate</i> (Sm) Seem.
52	<i>Tectona grandis</i> L	Saag	S	Urinary tract infection	Sabarkantha, Dahod	Take around 15gm seeds. Crush and make fine paste. Dilute in water ($\approx 100\text{ml}$). Feed to the animal.
53	<i>Thea sinensis</i>	Cha	Lf	Tympanites	Kutch	Take 250–300gm dried tea leaves. Boiled in water ($\approx 500\text{ml}$). Also add 50–75gm salt or sugar. Feed the cattle to cure gastroenteritis, also given when cattle are not eating food properly.
				Placental expulsion	Junagadh	Feed 1kg tea-dust available in market for placental expulsion.
54	<i>Tinospora cordifolia</i> (Willd) Miers	Galo	St	Lactation	Sabarkantha	Feed around 1kg stem every day.
				Mouth ulcer	Sabarkantha, Banaskantha, Junagadh, Kutch	Take around 100gm stem. Crush well and make fine paste. Apply on the tongue of the suffering animal.
55	<i>Trachyspermum ammi</i> (L) Sprague	Ajamo	S	Colic	Sabarkantha	Take around 50gm dry seeds and crush. Mix well with powdered betel nuts (2 pieces), black pepper ($\approx 10\text{gm}$) and dry ginger ($\approx 20\text{gm}$) in any cooking oil ($\approx 500\text{ml}$). Feed to the animal.
				Tympanites	Junagadh	Take around 100gm of dry seeds and feed to the affected animal with 200gm of jeggary.

No.	Plant name	Common name	Plant part used	Ailment	Place	Mode of administration
56	<i>Trigonella foenum-graecum</i> L	Methi	S	Fracture	Sabarkantha	Take around 250gm seed powder and soak in water. Apply the sticky paste to a wet cloth. Set the fractured bone and tightly bind the cloth with paste. Cover with several layers of cloth and let it dry. Leave the bandage for 5–6 weeks.
57	<i>Urginea indica</i> (Roxb) Kunth	Jangli Dungari	B	Colic	Sabarkantha, Dang, Vadodara	Take 5 – 6 bulbs. Pound and make fine paste. Dilute in water (\approx 1liter). Feed to the animal.
58	<i>Vanda tessellate</i> (Roxb) Hk f	Vando	Wh	Constipation	Sabarkantha	Take almost 1kg fresh plant and pound gently. Feed it.
59	<i>Vigna radiata</i> (L) Wilczek var radiate	Adad	S	Problems related to womb	Kutch, Junagadh	Soak around 10kg of seeds in water. Feed to the affected animal.
60	<i>Wrightia arborea</i> (Dennst) Mabberley	Khann	Ft	Lactation	Sabarkantha	3 – 4 fresh tender fruits are fed to cattle every day for better lactation.
61	<i>Zingiber officinale</i> L	Aadu	Rh	Tympanites	Sabarkantha	Take around 20gm dry ginger powder. Mix well with powdered caraway (\approx 50gm), 2 betel nuts, black pepper (\approx 20gm) and some cooking oil. Feed to the affected animal.
62	<i>Ziziphus mauritiana</i> Lam	Bordi	Rt	Sickness	Junagadh	Feed almost 500gm fresh root.

As = Apical shoot; B = Bulb; Bd = Bud; Bk = Bark; Fl = Flower; Ft = Fruit; G = Gum; In = Inflorescence; L = Latex; Lf = Leaf; Rh = Rhizome; Rt = Root; S = Seed; Sh = Shoot; St = Stem; Tw = Tender twigs; Wh = Whole plant

Result and Discussion

The present study revealed fascinating facts which provide great possibilities of further studies to recognize the scientific bases involved after the use of these plant species to treat different ailments. The study also enlightens the distribution patterns of Indigenous Knowledge. The present study shows that even within the community, the knowledge is not evenly spread but it is much concentrated with the elders of the ethnic groups. The healers do not share their knowledge other than their family members, especially male members to maintain their monopoly in this field. So the knowledge is less spread yet in safe hands.

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