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Veterinary medicinal plants used by Bhil tribe of Pratapgarh district (Rajasthan)

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Abstract
The present paper deals with the veterinary medicinal plants used by the tribal people of Pratapgarh District, Rajasthan. The predominant tribes living in this region are Bhil, Mina, Damor, Ninama, and Garasiyia. During present study 32 angiosperms residing to 20 families have been documented. Documented veterinary medicinal plants are tabulated alphabetically with their local name, family, part used, modes of use and the ailments for which they are used.

Keywords: veterinary medicinal plants, Traditional knowledge, Pratapgarh District

Introduction
Before prehistoric period domestic animals started to act under the direction of man. Horse was perhaps the first domesticated animal for the service of mankind. Domestic animals played a very significant role in tribal as well as others life for food, milk, leather, transport etc. These livestock are the key links of rural backbone and economy booster of country, by giving their proper worth for human kind, even during recent pandemic disease COVID19, raw food material and livestock products played a very strong vital role for mankind instead of junk food. These all domesticated animals are mentioned in Vedas and Upnishad. In this paper observations were made that how tribal and rural and local people cure their domestic animals from different diseases, by using different plant species with their ancient knowledge without allopathic treatment in remote areas.

Study Area
Rajasthan is the largest state of India, and lies between latitudes 23°3' and 30°12' North and longitudes 69°30' and 78°17' East. Remarkable geological feature of Rajasthan is "the Aravalli"- the oldest mountain range in the world – which divides state diagonally end to end, from north-east to south-west; another prominent feature is the Vindhyan range. The variable climatic, edaphic and topographic conditions of the state cause diversity in the vegetation. There are two forest types in the state, namely tropical thorn forest and tropical dry deciduous forest [1] tropical dry deciduous forest rich area mostly confined to eastern and southern parts of the state.
However, the western part is devoid of forest because of prevailing hot arid conditions.

The tribals of Rajasthan state dwell in numerous pockets in some inaccessible or less accessible forests, hills, desert and another habitat. Tribal population of Rajasthan is about 12.44% [2] of the total population of the state. These tribal's still lives in the archaic style in solitude from modern civilization, upholding the ancient traditions and rituals of their ancestors. The main tribes of Pratapgarh District are the Bhil and Mina and other nomadic tribes are Garasia, Ninama and Damor.

Materials and Methods
During present investigation, attempts were made to characterize the different wildly growing plants used by tribals to cure diseases of domestic animals. For this purpose, collection and documentation of veterinary medicinal plants of Pratapgarh District, (Rajasthan) has been done by several field trips, during March 2017 to Dec 2019. The method of collection was followed by vouchers specimens, their preservation in Herbaria and technique for the collection of veterinary medicinal plants on the basis of information that recommended by scientist. During field trips, acquired facts were collected on the basis of personal interviews with village head, knowledgeable person and old women of society. The congregated plant specimens were identified with the help of taxonomic literature and floras. [3, 5]. Gathered information was cross-checked with available literature [4]. The assembled specimens were identified with the help of available literature [6]. The herbarium specimens were deposited in the Department of Botany, University of Rajasthan, Jaipur.

Results
Following plant species used in veterinary conditions by tribals of Partapgarh District.

Table 1

S. No.	Botanical name	Local name	RUBL-NO	Family	Disease	Mode of treatment and useful part
1	*Abrus precatorius* Linn.	Chirmi/ Chanboi	19634	Fabaceae	Arbespectares	Seeds are given orally
2	*Acacia catechu* (Linn.f) Willd.	Khair/Kathha	19513	Mimosaceae	Scabies	Catechu is smeared locally
3	*Acacia sinuate* (Lour.) Merr.	Sikakai	-	Mimosaceae	Retention of	Stem bark with root of Z. nummularia is

					placenta	boiled in water and given orally
4	*Aegle marmelos* (Linn.) Corr.	Bel /Beel	19977	Rutaceae	Body heat and diarrhea	Fruit pulp is given orally with seed cake of mustard and flour of barley
5	*Allium sativum* Linn.	Lasann/Lahsun	-	Liliaceae	Fever	Bulblets and jiggery are boiled with milk and given orally
6	*Aloe barbadensis* Mill.	Gwarpatha/ Rambans	-	Liliaceae	Boil	Leaf paste is given with fodder
7	*Azadirachta indica* A.Juss.	Neemdo/ Neem	19568	Meliaceae	Foot and mouth disease	Leaves are boiled in water, used to wash mouth and hooves
8	*Butea monosperma* (Lam.) Taub.	Cheela /Chhola	19984	Fabaceae	Prolapsus of uterus	Roots are crushed, boiled in water and given
9	*Cicer arietinum* Linn.	Chana/ Hoore	-	Fabaceae	Indigestion	Flour is given with buttermilk
10	*Cissus quadrangularis* Linn.	Hadjoori	19993	Vitaceae	Bone fracture	Paste of stem is given and smeared/ tide
11	*Citrus medica* Linn.	Nimbu	-	Rutaceae	Indigestion	Crushed leaves are given
12	*Cleome gynandra* Linn.	Safed Bagroo/ Hulhul	=	Cleomaceae	Maggots	Plant juice is sprayed locally
13	*Cocculus hirsutus* (Linn.) Diels.	Bajarbel/ Jaljamani	19969	Menispermaceae	Diarrhea	Whole plant is given
14	*Cordia dichotoma* Forst.f.	Lisora /Lehsua	20005	Ehretiaceae	Tumpley	Dried fruit is given with water
15	*Curcuma amada* Roxb.	Ama Haldi	-	Zingiberaceae	Muscular pain	Boiled rhizome powder is given with ghee or oil
16	*Curcuma longa* Linn.	Haldi	-	Zingiberaceae	Retention of placenta	Turmeric powder is given with jiggery and oil
17	*Diospyros melanoxylon* Roxb.	Timru/ Tendu	19618	Ebenaceae	Foot and mouth disease	Fruit juice is applied locally
18	*Euphorbia hirta* Linn.	Dudhi	20085	Euphorbiaceae	Diarrhea, intestinal worms	Leaf paste is given with water
19	*Gloriosa superb* Linn.	Ladokari	19552	Liliaceae	Foot infection	Crushed tuber paste is applied locally on hooves with liquor
20	*Gymnema sylvestre* (Retz.)R.Br.ex Schult.	Gudmar	-	Asclepiadaceae	Exposure to disease	Warmed paste of leaves are given
21	*Ichnocarpus frutescens* (Linn.) R.Br.	Apho	20039	Apocynaceae	Prolapsus of uterus	Leaf paste is mixed with dry ginger, boiled and given
22	*Launaea procumbens* (Roxb.) Ramayya & Raja gopal	Rookhadi/ Jungli ghobi	19964	Asteraceae	Diarrhea, Body heat	Crushed root is given with curd. Leaf paste is given with butter milk
23	*Madhuca indica* J.F. Gmelin	Mahua	20069	Sapotaceae	Swelling, tumour	Leaf paste is given with butter milk
24	*Nicotiana tabacum* Linn.	Tambaku	-	Solanaceae	Tumpley	Leaves are mixed in water and filtered; this water is given with fodder
25	*Ocimum canum* Sims.	Jungli tulshi	20053	Lamiaceae	Diarrhea, insect repellent	Seed paste is given with whey, leaves are rubbed over body to keep away insects
26	*Pedalium murex* Linn.	Dekhano Gokhroo	20020	Pedaliaceae	Body heat, Diarrhea	Plant is soaked in water for4, 5 hours. This medicated water is given to drink.
27	*Pithecellobium dulce* (Roxb.) Benth.	Jungle jalebi	20043	Mimosaceae	Boils	Warmed leaves with leaves of castor are tied on infected part.
28	*Ricinus communis* Linn.	Arand /Arandi	20022	Euphorbiaceae	Scabies	Oil is applied over affected area
29	*Solanum nigrum* Linn.	Kali chirpoti	20027	Solanaceae	Exposure to disease	Leaves are crushed in to paste and given
30	*Tribulus terrestris* Linn.	Kanti/ Gokhroo/Bhakadi	-	Zygophyllaceae	Body heat	Crushed seeds are given in cattle food.
31	*Tridax procumbens Linn*.	Khoon datani/ Rookhari	20032	Asteraceae	Retention of placenta, wounds	Paste of 20-30 gm leaves are mixed with cow dung and make a cake, this is given with water, while in wounds plant juice is dipped over affected area.
32	*Ziziphus mauritiana* Lam.	Bordi, Pemli bor	20037	Rhamnaceae	Conjunctivitis	Leaf juice is mixed with mustard oil and rubs lightly near eye lids of affected area.

Discussion

Tribal communities are still very far from modernization or may be from economic socialization. They are still living with minimal requirements and with the dependency of plants products weather these are medicines, shelter or food, they are almost dependent on natural resources for their life expenditure. Nurture and domestication of livestock for daily basic need of earning and for daily routine lifestyle are key featured important role of livestock's in life of human civilization. During present investigation interviews have taken with different kind majority of the people who got this ancient knowledge in legacy form their forefathers. While some people gathered these hand magical tricks and knowledge by grasping it form surrounding. Mostly farmers, local peoples and nomadic pastoralists of Southern Rajasthan are not well settled in context of prosperity and they are dependent on medicinal plants for their livestock treatment, as they cannot afford the expenditure of modern allopathy veterinary drugs for their Cattle's. This study shows that how these plants are useful for human civilization in saving their domestic animals by several diseases.

The present study revealed that, people of the study region use 32 medicinal plants for their livestock health care. Similar studies have also been documented in other parts of Rajasthan [7]. Traditional healers and other peoples who are called by various names like Jaga, Gyani, Guni, or Puzari of the region mostly use herbs or smaller forms of plant for the treatment of their animals that might be due to the fact that herbs are available everywhere and easy to collect as compared with other growth forms. The results indicate the profusion of herbs in the study area and their high usage might also be due to the effective efficiency of herbaceous plants against livestock diseases. The similar findings were also reported from other studies conducted in different parts of the world [8].

Investigation shows that family Fabaceae is widely utilized by healers and local peoples to cure livestock ailments and some other studies, which are same has also been done by other investigators in other reasons of world and India [9, 10]. This observation is also same of Katewa *et al*. [10] and Bhatt *et al*. [11] who in an ethnoveterinary survey reported Fabaceae family 15.38% as the highest. The similarities among these studies could be due to the same beliefs and cultures and same dominant vegetation of the areas.

Usually leaf and apical part of plants are using to make most of all ethnoveterinary and herbal medicines of Southern Rajasthan as well as in other parts of India and world, where traditional healers are giving their contribution to provide safety and good health for their livestock's [12]. Reason behind to take leaves in natural remedies could be the easy availability and the common thought behind it that, usually Cattle feeds leaves directly and leaves have different type of sap (secondary metabolites) and easy to digestible for animals, while other parts of plant are not easily accessible for healers and they have bitter taste and other alkaloid like gum and resin. Although this statement about other plant parts is not universal as there are so many other plant parts which are using to cure common and specific diseases related with livestock. Some healers used whole plant to make remedy for livestock while there are very few evidences that tribes destruct whole plant as they usually try to save vegetation for future until or unless it's not very necessary, they pluck leaves, barks or small branches for their remedies, that's why they are called "van putra". And the act of tribes in this direction is considered as sustainable type of harvesting.

Domestic animals like buffalos, cows, goats, sheep and some examples of camels and donkeys and very few about horses have been listed in this investigation of local treatment by tribes, while pets like dogs, cats have been not observed and reason behind could be that as we interviewed with locals and they said domestic animals are very useful for them in context of socioeconomic aspect, they got bridal and groom engagements on basis of numbers of domestic animals as it shows their social and economic status in the society while pets are only the part of succession of civilization and they can't deny it also but the treatment of them is not in their priority. And they recovered themself by their adaptation. Similar results have been observed by different ethnobotanist and other scientists in other regions of world [13]. Other observation that comes out during this investigation is, mostly plants are used for stomach and skin diseases in domestic animals and common disease between these Cattles are Diarrhea, Constipation, Scabies, Bone fracture, and Expulsion of worms. It has already been observed by different veterinary scientists that skin and stomach infections are more common in lactating animals which might be due to due to poor quality of fodder and drinking water [14].

Formulation of ethnoveterinary drugs from same plant for same disease could be differ by different traditional healers and by locals as in different geographical areas they have some different kind of knowledge which they have obtained from their forefathers or by surrounding. In Southern Rajasthan tribes and healers usually used powdery or decoction form for different ailments [15]. Powdering or boiling is the most common method of drugs extraction. Most of the medicines are prepared using single plant mixture while some drugs are also prepared in the form of blend and it is generally believed that potency of the drugs can be enhanced when used in concoction or blend form [16]. These medicines are mostly given orally to animals in study area and for this purpose tribes use a bamboo utensil specially made for animals they pore that mixture or blend in buttermilk or water and give it orally to them or used to mix it with flour, milk, buttermilk and pore it in their fodder. Same findings have been found in different areas of world by different ethnoveterinariest [17,18].

Conclusion:

Total thirty -two plants belonging to twenty different families of angiosperm are being used by the tribes of Pratapgarh Tehsil. Among them the dominant families are Fabaceae, Asteraceae, Euphorbiaceae, Rutaceae and Liliaceae. These thirty-two plants are used in portions, partially or fully, by the tribes of investigated area. Rural area peoples and tribal peoples usually go through natural remedies obtained from plants, as allopathic medicines are very costly for expenditure on livestock. Folkloric medicine men of these areas have splendid knowledge and skills to formulate herbal medicines for their cattle's. Stomach and skin infection through insects are the most common disease in animals of studied area. Therefore, good food and fodder quality is a must need to reduce these local infirmities of livestock. Plant leaves and other parts are good source of bioactive compounds which are using as remedy by local and traditional healers in several diseases, must be examine in laboratories so that ancient knowledge of tribes can be transmitted in next generation for further genesis welfare. This is kind of god gift herbal knowledge to tribes and locals, as they are much close to nature and this must be conserved for further generation and for future of healthy livestock. Still in developing countries this is a serious issue of ignorance of livestock health while governments are doing productive procrastination. They have so many plans and policies for rural and remote areas but still there is lacuna between policies and tribes.

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