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Documentation of Ethno Veterinary Practices in Selected Sites of Wolaita and Dawuro Zones, Ethiopia

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Abstract- To keep animals healthy, traditional healing practices have been applied for centuries and have been passed down orally from generation to generation. Rural tribal people generally depend on plants for curing their livestock due to the problem of animal health delivery system. In Ethiopia, the use of ethno veterinary practices to treat and control livestock diseases is an old and important practice. The field survey was carried out in Wolaita and Dawuro Zones of SNNPR, Ethiopia to document ethno veterinary practices in the area. A total of 89 individual healers were purposively selected and interviewed based on their knowledge of using traditional medicine to cure their animals. Descriptive statistics was used to analyze and summarize the ethno-botanical data. Forty plants, which have medicinal value against a total of 27 livestock diseases, were reported and botanically identified as belonging to various 25 plant families. Leaves (57.14%) were the major plant parts used in the study areas. The informants mostly practice oral drenching of plant preparations (77.36%). The age level of healers indicated that the majority were (60.7%) are above the age of 40. This study revealed that ethno-veterinary treatment is playing a significant contribution in treating animal diseases and parasites. Scientific investigations should be carried out to ascertain the effectiveness of identified plant species.

Keywords: animal diseases, ethno-veterinary, Dawuro, Ethiopia, traditional medicine.

I. INTRODUCTION

Ethno-veterinary medicine (EVM) is a scientific term for traditional animal health care that encompasses the knowledge, skills, methods, practices, and beliefs about animal health care found among community members (McCorkle, 1986). The knowledge of ethno-biology is orally passed from generation to generation, hence with continuous disruption of cultural set-ups and younger people showing disinterest in learning local languages, traditional knowledge is on the verge of disappearance. The importance of this body of knowledge is best explained by the African proverb, "When a knowledgeable old person dies, a whole library disappears" (Lalonde, 1993).

Ethno-veterinary practice to animal health care is as old as the domestication of various livestock species (Sri Balaji et al., 2010). However, indigenous

traditional knowledge of medicinal plants of various ethnic communities, where it has been transmitted orally for centuries, is fast disappearing from the face of the earth due to the advent of modern technology and transformation of traditional culture. The collection of information about natural flora, classification, management and use of plants by the people holds importance among the ethno botanists. The local people and researchers face the challenging task of not only documenting knowledge on plants, but also applying the results of their studies to biodiversity conservation and community development (Ford, 1978). Therefore, this study was conducted to document the use of indigenous ethno-veterinary knowledge used by healers to treat diseases and parasites of animals.

II. MATERIALS AND METHODS

a) Study areas

The study was conducted in Wolaita and Dawuro Zones of SNNPR. Wolaita zone in Southern Ethiopia, located at 6.40 – 7.20 N and 37.40 – 38.20 E (CSA, 2003). Wolaita Zone receives total annual rainfall of 1112.3mm, and annual mean maximum and minimum temperature of 25.40C and 14.50C. The average annual humidity ranges from 60.9 – 63.5% (Wolaita Zone Finance and Economic Development Department, 2003). On the other hand Dawuro zone is situated within the coordinate of 6.59-7.34 latitude and 36.68 - 37.52 longitudes, with an elevation ranging 501-3000 meters above sea level. The annual mean temperature of Dawuro zone ranges between 15.1 - 27.5oc and the annual mean rainfall ranges 1201 - 1800mm

b) Field surveys

The survey was conducted to collect information on the traditional uses of plants in animals' health care system using a semi structured interview and observation with the traditional healers who have willingness to share their knowledge. A total of 89 individual healers were purposively selected and interviewed based on their knowledge on traditional medicine. Interviews were conducted in local languages.

c) Sample size and sampling techniques

In this study, PAs were selected from the study area using purposive sampling techniques as to select

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known traditional healers and different plant species used to treat diseases. The traditional healers selected using purposive sampling technique to gather the relevant data.

III. DATA COLLECTION AND ANALYSIS

Specimens of plants that were used by the traditional healers for treatment of livestock diseases were collected based on the information supplied by the healers during the interview. The specimens of plants were collected in the field using standard botanic methods together with the traditional healers, that including the vegetative part, leaves, and floral, fruiting and/or seed parts as it was appropriate for taxonomic identification. The information collected were the local name of the traditional medicinal plant, diseases treated, parts of the plant used, method of preparation and route of administration. The collected samples of medicinal plants were coded, pressed, dried and then sent to National Herbarium in faculty Science of Addis Ababa University of Ethiopia for identification of the plant taxonomy.

The ethno veterinary plants' data were analyzed using descriptive statistics, i.e., Proportions

(percentiles), figures and tables were used to summarize the collected ethno-veterinary medicinal plants data.

IV. RESULTS AND DISCUSSION

Ethno-veterinary remedies are found to be effective against a wide range of common disease conditions and parasites in the study area. According to the result of survey farmers in the study areas depend mainly on medicinal plants to treat livestock health problems such as abscess, anthrax, babesia, blackleg, bloat, bottle jaw, circling disease, coccidiosis, colic, constipation, coughing, diarrhea, epizootic lymphangitis, external parasites, fractured bone, internal parasites, leech, low libido, mastitis, Newcastle disease, oestrus ovis, pasteurellosis, rabies (immediately after bitten by rabied animal), retained placenta, snake bite, swelling and trypanosomiasis. A total of 40 ethno-veterinary medicinal plant species belonging to various 25 families were documented with details on their importance, mode of application, use, ingredient added, traditional preparation, plant part used, habit, family name, scientific name, local name and code (Table 1).

Table 1 : List of ethno-veterinary medicinal plants, their preparation, indication and the route of administration for the treatment of livestock health problems in study area

No	Local Name	Scientific name	Family	Plant parts	Preparation	Indication	Route	Animals
1.	Agupiya	Artemisia sp.	Asteraceae	Leaf	Crushed leaves mixed with water	Diarrhea, Bottle jaw	Oral(drenching)	Cattle
2.	Anchechiya	Rumex nervosus Vahl	Polygonaceae	Stem	Crushed stem mixed with water and filtered	Babesia, Constipation	Oral(drenching)	Cattle
				Seed	Grinded seed mixed with water	Swelling	Topical application to the wound after opening the swelling	
				Leaf	Crushed leaves	External parasites	Topical application	
3.	Anka	Croton macrostachyus	Euphorbiaceae	Leaf	Crushed leaves mixed with water and filtered	Blackleg, Bloat	Oral(drenching)	Cattle
4.	Asfa Chakga	Conyza sp.	Asteraceae	Leaf	Crushed leaves mixed with water	Internal parasite	Oral(drenching)	Cattle
5.	Aydame	Acmella caulirhiza Del.	Asteraceae	Leaf	Crushed leaves	Leech	Nasal(to smell until sneezing)	Cattle
				Seed	Grinded seed with milk	Internal parasite	Oral(drenching)	Cat
				Leaf	Crushed leaves mixed with water and filtered	Newcastle	Oral	Poultry
6.	Borisa	Echinops spp.	Asteraceae	Root	Grinded root mixed with water	Diarrhea, Pasteurellosis	Oral(drenching) Oral(drenching)/nasal	Cattle
7.	Buluwa	Solanum incanum L.	Solanaceae	Seed	Grinded seed mixed with water and filtered	Leech	Nasal(drop)	Cattle , shoats

8.	Bunbadie	<i>Asystasia gangetica</i> (L.) T Anders.	Acanthaceae	Leaf	Crushed leaves mixed with water	Pasteurellosis	Oral(drenching)	Shoats
9.	Buzuwa	<i>Vernonis</i> sp.	Asteraceae	Flower Stem Leaf	Crushed flower mixed with water and filtered Crushed leaves mixed with water	Babesia Trypanosomiasis	Oral(drenching) Oral(drenching)	Cattle
10.	Chawla (Yedega Abalo)	Rutaceae	Rutaceae	Seed	Grinded seed mixed with water	Colic	Oral(drenching)	All
11.	Chyshie	<i>Triumfetta</i> sp.	Tiliaceae	Leaf	Crushed leaves mixed with water	Trypanosomiasis	Oral(drenching)	Cattle
12.	Dambursa	<i>Pentas</i> sp.	Rubiaceae	Leaf, root, stem	Crushed leaves and stem mixed with water and filtered	Blackleg Fractured bone Internal parasite Constipation	Oral(drenching)	Cattle
13.	Eterwanjiya	<i>Ehretia cymosa</i> Thonn.	Boraginaceae	Leaf	Crushed leaves mixed with water	Internal parasite	Oral(drenching)	Cattle
14.	Gara	<i>Vernonia amygdalina</i>	Asteraceae	Leaf	Crushed leaves mixed with water	Internal parasite, Diarrhea, Colic	Oral(drenching)	Cattle
15.	Gegecho	<i>Maesa lanceolata</i> Forssk	Myrsinaceae	Leaf	Crushed leaves mixed with water	Bloat	Oral(drenching)	Cattle
16.	Gizawa	<i>Withania somnifera</i> (L.) Dunal	Solanaceae	Leaf, Stem	Crushed leaves and stem mixed with water and filtered	Blackleg, Trypanosomiasis, Snake bite	Oral(drenching) Topical	Cattle, shoats
17.	Gofe Gofa	<i>Helinus mystacinus</i> (A it.) E. Mey. ex Steud.	Rhamnaceae	Root	Grinded root mixed with water	Blackleg	Oral(drenching)	Cattle
18.	Hotorsa	<i>Rumex nepalensis</i> Spreng.	Polygonaceae	Leaf and root	Crushed leaves and root mixed with water	Coughing	Oral(drenching)	Cattle
19.	Kalala	<i>Stephania abyssinica</i> (Dillon & A. Rich.) Walp.	Menispermaceae	Root	Grinded root mixed with water	Mastitis Blackleg Tryps	Oral(drenching) or Nasal (drop)	Cattle
20.	Kanfara	<i>Buddleja polystachya</i> Fresen.	Loganiaceae	Leaf	Crushed leaves mixed with water	Internal parasite, Diarrhea	Oral(drenching)	Cattle
21.	Kara	<i>Shrebera alata</i> (Hochst.) Welw.	Oleaceae	Leaf	Crushed leaves mixed with water and filtered	Blackleg	Nasal (drop)	Cattle
22.	Kindichuwa	<i>Sida schimperiana</i> Hochst. ex A. Rich.	Malvaceae	Leaf	Crushed leaves mixed with water and filtered	Diarrhea	Oral(drenching)	Cattle
23.	Kona	<i>Girardinia</i> sp.	Urticaceae	Leaf, stem, root	Grinded leaf, stem and root mixed with water	Rabies(immediately after bitten by rabid animal), circling	Oral(drenching)	Cattle
				Root	Grinded root mixed with water	Internal parasite	Oral(drenching)	Sheep and goats
24.	Kutokwa	<i>Senna occidentalis</i> (L.) Link	Fabaceae	Leaf	Crushed leaves mixed with water	Trypanosomiasis	Oral(drenching)	Cattle

25.	Mello	<i>Calpurnia aurea</i> (A. it.) Benth.	Fabaceae	Leaf	Crushed leaves mixed with water	Oestrus ovis Trypanosomiasis	Nasal(drop) Oral(drenching)	Sheep Cattle
26.	Mulu'a	<i>Kalanchoe</i> spp	Crassulaceae	Root Leaf	Applying the root cover Crushed leaves mixed with water	Abscess Low libido, Blackleg	Topical Oral(drenching)	Cattle
27.	Olomo	<i>Plecthranthus</i> / <i>Pycnostachyus</i> sp.	Lamiaceae	Leaf	Crushed leaves mixed with water	Mastitis Blackleg Anthrax	Oral(drenching)	Cattle
28.	Onta	<i>Prunus africana</i> (Hook. f) Kalkm	Rosaceae	Leaf	Crushed leaves mixed with water and filtered	Blackleg	Nasal(drop)	Cattle
29.	Selo	<i>Ranculucus multifidus</i> fors.sk	Ranculucaceae	Leaf	Crushed leaves mixed with water	Trypanosomiasis	Oral(drenching)	Cattle
30.	Senkara	<i>Dodonea angustifolia</i> L.f.	Sapindaceae	Root	Grinded root mixed with water	Blackleg	Nasal (drop)	Cattle
31.	Sensel	<i>Justicia schimperiana</i> (Hochst. ex Nees) T	Acanthaceae	Leaf	Crushed leaves mixed with water and filtered	Circling disease	Oral(drenching)	Sheep and goats
32.	Shecocomen	<i>Solanecio gigas</i> (Vatke) C.Jeffrey	Asteraceae	Leaf	Crushed leaves mixed with water	Internal parasite	Oral(drenching)	Cattle
33.	Shushale	<i>Brucea antidysenterica</i> JF. Mill.	Simaroubaceae	Leaf and seed	Grinded seed and leaf left to dry and mixed with water Or mixed with water	Epizootic Lymphangitis	Let them to eat Oral(drenching)	Equine
34.	Tembaho	<i>Nicotiana tabacum</i> L.	Solanaceae	Leaf	Crushed leaves mixed with water and filtered	Trypanosomiasis Leech	Oral(drenching) Nasal	Cattle
35.	Tintelshawa	<i>Tragisa</i> sp.	Euphorbiaceae	Root Leaf	Grinded root mixed with water	Blackleg Anthrax Internal parasite	Oral(drenching)	Cattle
36.	Tumua	<i>Allium</i> spp	Alliaceae	Root	Grinded root mixed with water	Trypanosomiasis	Oral(drenching)	Cattle
37.	Unknown	<i>Acalypha</i> spp.	Euphorbiaceae	Root	Grinded root mixed with water	Bloat	Oral(drenching)	Cattle
38.	Zagiya	<i>Milletia ferruginea</i> (Hochst.) Bak.	Fabaceae	Root	Crushed root mixed with water	Trypanosomiasis	Oral(drenching)	Cattle
39.	Zeyisa	<i>Ageratum conyzoides</i> L.	Asteraceae	Leaf and root	Crushed leaves and root mixed with water	Coccidiosis Trypanosomiasis	Oral Oral(drenching)	Poultry Cattle
40	Zou'uta	<i>Ensete ventricosum</i> (Welw.) Cheesman	Musaceae	Leaf	Leaf	Retained placenta	Let the animal to eat the leaf by herself	Cow, sheep



Fig. 1 : Some of plant species used by traditional healers (Photo source: Mesfin M Moliso)

Some of diseases mentioned by farmers in this study indicated symptoms of disease. The naming of disease by local people when compared to the western veterinary medicine system, at times did not distinguish between diseases and symptoms of diseases. This is because local disease nomenclature is based on symptoms of disease, whereas under western veterinary science, disease are named according to etiological information (McCorkle, 1986).

As a consequence, several uniquely named animal health problems may allude to the same disease

when defined by western veterinary science, or conversely, certain local terms may encompass several different diseases (Pratt & Gwynne, 1977).

The parts of plant used as medicine traditionally are leaf (57.14%), root (25%), seed (7.14%), stem (8.92%) and flower (1.8%) (Fig.2). Accordingly the leaves were the predominantly used plant part of herbal preparation in the study areas, which agrees with the study in other part of Ethiopia (Jain et al, 2009); Leaves have been used as a remedy more than other parts since leaves seem to contain more active chemicals.

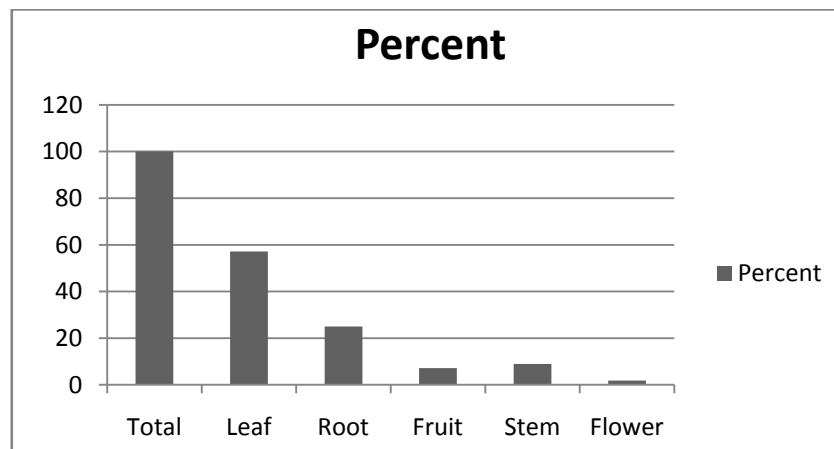


Fig. 2 : Proportions of the part of medicinal plants used for treatment of different livestock diseases

As the result shows 77.36% of administration site of traditional medicines is through mouth (orally) and the medicines are also given through nose (15.1%)

and as an ointment on skin (topical) (7.54%) (Fig.3). The oral route of administration is suspected to have rapid physiological reaction with the causative agents and

increase the curative power of the medicinal plant remedies. This observation was coincided with the findings of study in Jimma zone (Yigezu et al, 2014) and

Gimbi district, West Wellega (Tolossa, 2007) and Amaro special district (Tekle, 2015) of Ethiopia and Nu villages of China (Shen et al, 2010).

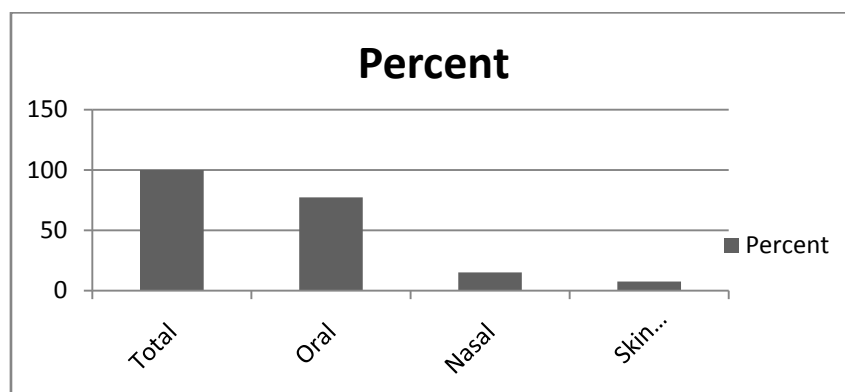


Fig. 3 : Proportion of route of administration of plant preparations for treatment of livestock diseases

The age level of healers 39.3% are within the age range of 25 – 40 and 60.7% are above the age of 40.

The medicinal plants largely found in natural habitats due to the combined factors (Giday et al, 2009) like mass destruction in their habitats, (Bekele & Musa, 2009) agricultural and urbanization expansion (Kebu et al, 2004; Cunningham, 1996), herbal preparation involves roots and bark, grazing, soil erosion, orally transfer of indigenous knowledge from generation to generation, (Abebe & Ayehu, 1993) draught and urbanization are the major threaten to their survival of the mother plants. Consequence, the stock resources of the ethno-veterinary medicinal plants are coming diminished in their population (Kebu et al, 2004).

V. CONCLUSION

The survey result revealed that 40 plant species representing 25 families were used by traditional healers to treat and control livestock diseases and parasites in the study areas. Further research is needed to determine optimal doses and concentrations of the preparations and to identify the side effects of the remedies. Moreover the efficacy of the preparations, techniques and practices need to be investigated to identify promising plants/techniques for use in the treatment and control of diseases and parasites of different livestock species.

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