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Medicinal plants used to treat domestic animals

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Abstract

Ethno medico botanical survey was conducted in the selected villages and hamlets of Kanakapura taluk of Ramanagara district of Karnataka from September 2019 to March 2021. This study was basically to document indigenous ethno medico-botanical knowledge of peoples specially Eruliga, Lambani tribal and rural peoples of the study area. In this article documented 48 medicinal plants which are being used to treat the domestic animals are belonging to 33 family of different habits. 14 ailments of domestic animals are treated with 26 formulations. Statistical analysis was done and presented in the table and figures. This investigation reveals the potency of medicinal plants and tribal knowledge in the formulation, preparation and mode of administration to treat domesticated animals for primary health care. The Study opens the eyes of scientific community for novel drug discovery and formulation to serve the domestic animals are major sources for farmers of the India as a health and wealth.

Keywords: medicinal plants, domestic animals, diseases, formulations

1. Introduction

Medicinal plants are the source for treating ailments for both human beings as well as domestic animals from ancient times of the India. The rural peoples were used herbal drugs as a primary health care remedies to treat domestic animals in the modern era also. This traditional veterinary medicine is practiced by farmer's and tribals of the India. In the villages and hamlets, veterinary services are difficult to access. This indigenous veterinary practices play a major role in that area to protect their livestock. Traditional medicine practice being cheap, secured and tested throughout the centuries from generation to generation [1, 2]. Systematic documentation of traditional knowledge through ethno botanical studies is an important tool for conservation of botanical sources and formulations, preparations and mode of administrations of herbal drugs. A report from WHO stated that nearly 80percent of the world's population in developed and developing countries depends directly or indirectly on traditional medicine to treat various ailments [3, 4]. During last decade several research articles are published by researcher from all over the globe, prove that the traditional veterinary medicine are come forward to a greater level through the scientific approach [5]. The indigenous peoples of different localities have developed their own specific knowledge of botanical sources to use as a medicine [6]. This knowledge varies from tribal to tribal and community to community based on their beliefs, skills, methods and practices which are used in the primary health care treatment of domestic animals [7]. Ethno veterinary medicine provide information about valuable alternatives and complements western-style veterinary medicine. Ethno veterinary remedies are very easily accessible and easy to prepare and administer at minimum or no cost to the farmer [8].

The present investigation was carried out in the selected villages and hamlets of the Kanakapura taluk of Ramanagara district of Karnataka. Kanakapura is located 12.55° N and 77.42° E latitude and longitude. Vegetation of the study area is deciduous and scrub forest including part of national reserve forest of Bannerughatta. The major economic source of the peoples are agricultural, horticultural crops and sericulture. Silk worm rearing and animal husbandry are commercial economic sources. They were rearing cattle like cows, oxen, buffalo, sheep and goats as a domestic animals as a source for their food, milk and milk products. Bulls were used for agricultural activities such as ploughing the field, transportation of agricultural goods, manure and are the commercial source for farmer. The tribal peoples resided in this taluk are belonging to Lambani, Eruliga and other communities have vast knowledge about the medicinal plants and their formulations and administration to treat the ailments of domestic animals. This traditional knowledge is start decline due to the modernization of society as the time passes. The present investigation is an action for scientific documentation of traditional knowledge before it is extinct and to pass this indigenous knowledge to the future generation.

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2. Materials and Methods

Ethno medico botanical field survey was conducted from September 2019 to March 2021. Information was collected; recorded by personal interview with standard ethno botanical questionnaire as suggested by Dr. S. L. Kapoor and Dr. Rama Mitra (1986) from the local peoples specially Eruliga, Lambani tribal and rural people of the study area. Document the medicinal plants which they were used to treat the ailments of domestic animals, officinal parts of the plants, formulations, preparations and mode of administrations. The plants used for veterinary treatment are collected, morphological features are noted in the field and identified by their vernacular names with the help of healer and local peoples. Collected specimens are tagged in the field. Formulation of officinal part of the plants and adjuvants which are being used for preparation of herbal drugs to treat ailment of veterinary animals such as cattle, sheep, goats etc., are documented. The specimens are scientifically identified with the help of local and regional floras [9-14]. Botanical specimens are arranged alphabetically according to the scientific name. Classified based on their family, vernacular name, habit, part used. Statistical analysis was done and documented in table and figures.

3. Results and Discussion

Local rural and tribal peoples of the study area were using 48 number of plants to treat domestic animals. Ailments of domestic animals and herbal formulations, preparations, adjuvants, mode of administrations and dosage are documented 3.1 sub heading. Botanical name and vernacular name, family, habit and officinal parts are documented in the Table-1. These plants species are used to cure different ailments of the domestic animals and are belonging to different families and are represented in the Fig-1 and belonging to different habits i.e., herbs are 19 numbers, shrubs are 8, trees are 11 and twinner and climber together 10 in number are represented in Fig 2. Officinal part of the plant body are represented in the Fig 3. Statistical analysis of formulations, adjuvants, family of botanicals, habits and officinal parts are documented.

3.1 Medicinal value (Ailments, formulation, preparation and mode of administration)

3.1.1 Antidote

Macerate 100gms of fresh leaves of *Tephrosia purpurea* with watery butter milk and apply the paste on the rodent bite place of a cow, for 3 days. It works as an antidote (Tab.1; SL No. 42).

3.1.2 Downer cow syndrome

- A. Boil the 100gms of dried mass of faeces of elephant in 1000ml of water, reduce to 500ml and cool. Supernatant along with suspended solid particles is administered to infected cow. Two times a day for 3-5 days to recover from the Down syndrome.
- B. Fresh stem bark of about 200gms of *Holoptelea integrifolia* is pounded and boiled with 1000 ml of water and filter. To this decoction add 10 gms of pounded dried fruits of *Piper nigrum* to this solution add 200gms of jaggary and dissolve. This preparation is administered two times a day for 3 days (Tab.1; SL.No.24 and 32).

3.1.3 Dysentery

Fresh leaves of *Abutilon indicum* and *Tylophora indica* about 100gms are chopped into pieces along with petiole and boiled

in 500ml of water for 30-40 minutes, along with 5-10gms of *Cajanus cajan* fruits and cooled. Filter through cotton cloth, filtrate of about 100-150 ml is administered to adult cow, 50-60 ml for calf, sheep or goats suffering from dysentery. Within one hour it act as an anti-dysenteric (Tab.1; SL.No.1, 46 and 10).

3.1.4 Fever

Cassia auriculata dried leaves are pounded into coarse powder, and *Cassia fistula* dried bark is pounded coarsely and dried cow dung is pounded separately. Then mixed all three coarse powders and once again pound the mixture and mixed uniformly and administered 3-5 table spoon with water internally, twice a day to the affected domestic animals (Tab.1; SL.No.13 and 14).

(Cow dung: Dried cow dung found on rocks-only such cow dung should be collected).

3.1.5 Flatulence

10gms of seeds of *Trigonella foenum* seeds, handful of fresh aerial part of *Cocculus hirsutus* and 1gm of resin of Hingu is administered internally along with 20-30 ml of seeds oil of *Ricinus communis* once in a day for cow. For sheep and goats 10 ml per day (Tab.1; SL.No.45, 16 and 35).

3.1.6 Gastrointestinal disorder

- A. During early stage of gastrointestinal disorder tender leaves of *Cymbopogon martinii*, *Cucurbita maxima*, *Wrightia tinctoria* and *Cadaba fruticosa* are taken equal quantity of about 25gm each and pounded with black jaggary and made a paste and dissolved in 500ml of water and administered orally two times a day for about 3 days to treat gastrointestinal disorder of cow and buffalos. For sheep and goat 100 ml is recommended (Tab.1; SL.No.19, 18, 47 and 9).
- B. 200gms of cleaned fresh roots of *Capparis sepiaria*, 10gms of *Allium sativum* and 5gms of *Syzygium aromaticum* dried floral buds are pounded along with two dried fruit of *Sapindus laurifolius*. Made a small round balls and given internally once in a day up to 3 days for an affected cow to recover from gastrointestinal disorder (Tab.1; SL.No.11, 3, 39, and 37).
- C. Pound fresh roots of 50gms of *Datura metel*, *Plumbago zeylanica* and 10gms of dried fruits of *Piper longum* and 4-5 number of dried fruits of *Capsicum annum*. Make a hand full of balls, three such ball are administered orally through dried straw of *Elusina caracona* once in a day for 3 days to the affected animals. (Tab.1; SL.No.20, 33, 31, 12 and 22).
- D. Pound 4-5 native fresh bulb of *Allium cepa*, 100gms of fresh aerial parts of *Tribulus terrestris* and 3-4 dried fruits of *Capsicum annum* along with 200gms of jaggary. These paste is made into balls and administered internally once in a day for 3-4 days (Tab.1; SL.No.2, 44, and 12).
- E. Collect 100gms of fresh and tender leaves of *Cucurbita maxima*, *Wrightia tinctoria*, *Piper betle* and *Toddalia asiatica* are pounded along with 250gms of Jaggary and 10gms of fruits of *Piper nigrum*. These paste is macerate with one hen's egg and administered with baby's urine of about 100-150 ml and give two times a day for 3 days to the affected animals. After administration give boiled and cooled water for drinking to the animals (Tab.1; SL.No.18, 47, 30 and 43).
- F. 250gms of stored fruit pulp of *Tamarindus indica* is grinded with little quantity of warm water and filtered

through sieve. Filtrate is administered along with 1000ml of warm water twice a day for 3 days to the infected animals (Tab.1; SL.No.40).

3.1.7 Hematochezia

Fruit's flour of *Elusina caracona* are boiled in water to get semi solid like a porridge and add 2-3ml of fresh leaves juice of *Ichnocarpus frutescens*. After cooling mixed with butter milk and administered of about 500ml, two times a day for a week. After administration give 3-4 four ripened fruit of *Musa paradisiaca*. (Tab.1; SL.No.22, 25 and 27).

3.1.8 Infertility

Pound the chopped pieces of 50gms of *Cordia dichotoma* stem bark along with tender shoot tips of *Artocarpus heterophyllus* is macerate with little amount of water to get paste and this paste is administered along with small sized live fish of about 2-3 cm length to the cow for conceive (Tab.1; SL.No.17 and 6).

3.1.9 Keratitis

- Fresh leaves of *Cassia occidentalis* are squeezed between the palms and collect 1-2 ml of juice. Add pinch of common salt and mix well. 4-5 drops of this mixture is put into the infected eye of domestic animals, two times a day for 4-5 days (Tab.1; SL.No.15).
- Collect fresh stem pieces of *Kirganelia reticulate* of about 10-15 cm length of 4-5cm diameter and blow forcefully on one end of the stem through mouth. On other end of the stem watery sap is oozes out drop by drop, these drops are directly put into the infected eye of domestic animals. Once in a day for about 2-3 days (Tab.1; SL.No.26).

3.1.10 Maggots in the wound

- Fresh leaves of *Peristopis bicalyculata* are collected and squeezed between the palm to get juice and add pinch of stem bark powder of *Strychnos nux-vomica*. Drop 1-3ml of juice on the infected wound to destroy maggots (Tab.1; SL.No.29 and 38).
- 5-10 grams of dried and cured leaves of *Nicotiana tabacum* which are readily available in shop is taken. Make fine powder by rubbing between the palms. Remove the debris from the fine powder. Sieved through a clean cotton cloth, collect the fine powder and apply directly by dusting on the wound to remove maggots. (Tab.1; SL.No.28).

3.1.11 Mastitis

- Mucilaginous leaf pulp of *Aloe vera* is macerate with cow butter and applied externally on affected area two-three times a day for 3 days (Tab.1; SL.No.4).
- Fresh leaves of *Dichrostachys cinerea* are pounded and make fine paste without adding water and macerate this paste with cow butter. Applied this preparation externally on affected area, two-three times a day for 3 days (Tab.1; SL.No.21).
- Fresh leaves of *Ipomea obscura* are collected and pounded into paste and apply along with butter on affected area, two-three times a day for 3 days (Tab.1; SL.No.34).

3.1.12 Retained placenta

- 2-3gms of dried floral buds of *Syzygium aromaticum* and 25-30gms leaves of *Gmelia asiatica* are pounded and macerate with minimum but sufficient quantity of water. These mucilaginous paste is given orally along with butter milk of about 200 ml to retained placenta condition of a cow to expel placenta (Tab.1; SL.No.39 and 23).
- Macerate 250gms of fresh leaves of *Azadirachta indica* with warm water and paste is applied around the vagina and covered with cotton cloth dipped in cold water to expel retained placenta of cow or buffalos (Tab.1; SL.No.7).

3.1.13 Uterusprolapse

- Aerial portion of *Biophytum sensitivum* of about 20-30 gms is macerated with luke warm water and the paste is given internally for domestic animals during uterus prolapse condition of cow or buffalo within two hours, it will be set right (Tab.1; SL.No.8).
- 100gms of dried fruits of *Ziziphus oenoplia* are pounded and fed to cow or buffalo along with feeds to prevent uterine prolapse during delivery (Tab.1; SL.No.48).

3.1.14 Wound healing

Inner core of the woody root of *Santalum album* is macerated with little amount of water on rough surface of the flattened stone to get sufficient quantity of fine paste. To these paste add 3-4gms of chopped fresh roots of *Aristolochia indica* and *Tarenna asiatica*. Macerate with the help of round shaped grinding stone till you get a fine paste. Applied over wound of cow once in a day for 3-4 days. Wound is going to start healing up (Tab.1; SL.No.36, 5 and 41).

Table 1: Enumeration of botanicals

Sl. No.	Botanical name	Vernacular name	Family	Habit	Parts used	Medicinal properties
1	<i>Abutilon indicum</i> (L.) Sweet.	Mudregida	Malvaceae	Shrub	Leaves	Anti-inflammatory/antidiarrheal
2	<i>Allium cepa</i> L.	Erulli	Liliaceae	Herb	Bulb	Antioxidant
3	<i>Allium sativum</i> L.	Belluli	Liliaceae	Herb	Bulb	Antioxidant/antibacterial
4	<i>Aloe vera</i> (L.) Sweet.	Lolesara	Liliaceae	Herb	Leaves	Antimicrobial/immune-regulator
5	<i>Aristolochia indica</i> L.	Eshwari	Aristolochiaceae	Twinner	Roots	Antidote/antimicrobial
6	<i>Artocarpus heterophyllus</i> Lam.	Halasu	Moraceae	Tree	Leaves	Antibacterial/Antidiarrheal
7	<i>Azadirachta indica</i> A. Juss.	Bevinamara	Meliaceae	Tree	Leaves	Anti-inflammatory/Uterus contract action
8	<i>Biophytum sensitivum</i> (L.) D.C.	Horamucchugagida	Oxalidaceae	Herb	Aerial portion	Immune modulator/Anti-inflammatory
9	<i>Cadaba fruticosa</i> (L.) Druce.	Maragade	Capparidaceae	Shrub	Leaves	Antidysenteric/antidiarrheal
10	<i>Cajanus cajan</i> (L.) Huth.	Thogari	Papilionaceae	Shrub	Seeds	Antidysenteric/analgesic
11	<i>Capparis sepiaria</i> L.	Kattarigida	Capparidaceae	Shrub	Root	Antibacterial/Anti-inflammatory/Anti dysenteric
12	<i>Capsicum annuum</i> L.	Menasinakayi	Solanaceae	Herb	Dried fruits	Anti-inflammatory/analgesic/thermogenic
13	<i>Cassia auriculata</i> L.	Angarigida	Caesalpiniaceae	Shrub	Leaves	Antioxidant/antipyretic
14	<i>Cassia fistula</i> L.	Kakkemara	Caesalpiniaceae	Tree	Roots	Antioxidant/anti-inflammatory/antipyretic

15	<i>Cassia occidentalis</i> (L.) Link.	Tagachesoppu	Caesalpiniaceae	Herb	Leaves	Antibacterial/antifungal
16	<i>Cocculushirsutus</i> (L.) Diels.	Jagadiballi	Menispermaceae	Twinner	Aerial part	Laxative/antimycobacterial
17	<i>Cordiadihotoma</i> Frost.	Gowdlemara	Boraginaceae	Tree	Stem bark	Ulcerative colitis/Colic pain
18	<i>Cucurbita maxima</i> Duchex. Lam.	Kumbala	Cucurbitaceae	Climber	Tender leaves	Antioxidant/Analgesic
19	<i>Cymbopogonmartinii</i> (Roxb) Wats	Aanchihullu	Poaceae	Herb	Tender leaves	Antimicrobial/Anti-inflammatory
20	<i>Daturamete</i> L.	Datturi	Solanaceae	Herb	Root	Sedative/Analgesic
21	<i>Dichrostachyscinerea</i> (L) Wt & Arn.	Vadavara	Mimosaceae	Shrub	Leaves	Analgesic/anti-inflammatory
22	<i>Elusinacaracona</i> (L.) Gaerth.	Ragi	Poaceae	Herb	Aerial part and fruit	Antioxidant
23	<i>Gmelinaasiatica</i> L.	Sannaseranegegida	Verbenaceae	Shrub	Leaves	Anti-inflammatory/antioxidant
24	<i>Holopteleaintegrifolia</i> ((Roxb) K. Schum	Tapasimara	Ulmaceae	Tree	Stem bark	Gastritis/Dyspepsia
25	<i>Ichnocarpusfrutescens</i> (L.) R.Br.	Kari kudi	Asclepiadaceae	Twinner	Leaves	Haematuria/wound healing
26	<i>Kirganelia reticulate</i> (Poir) Baill.	Hulikaddi	Euphorbiaceae	Shrub	Stem sap	Antibacterial/analgesic/anti-inflammatory
27	<i>Musa paradisiaca</i> L.	Bale	Musaceae	Herb	Fruits	Antidysenteric/Antidiarrheal
28	<i>Nicotianatabacum</i> L.	Hogesoppinagida	Solanaceae	Herb	Leaves	Antimicrobial/anthelmintic
29	<i>Peristopisbicalyculata</i> (Retz) Nees	Cheebegida	Acanthaceae	Herb	Leaves	Antimicrobial/anthelmintic
30	<i>Piper betle</i> L.	Villedede	Piperaceae	Climber	Leaves	Anaesthetic/Gastroproctant
31	<i>Piper longum</i> L.	Balamenasu	Piperaceae	Climber	Inflorescence/fruit	Antipyretic/analgesic/anti-inflammatory
32	<i>Piper nigrum</i> L.	Menasu	Piperaceae	Climber	Fruits	Antioxidant/analgesic
33	<i>Plumbagozeylanica</i> L.	Chitraka	Plumbaginaceae	Herb	Roots	Antidiarrheal/antidysenteric
34	<i>Ipomeaobscura</i> (L.) Ker Gawl.	Muguthiballi	Convolvulaceae	Twinner	Leaves	Antimicrobial/anti-inflammatory
35	<i>Ricinuscommunis</i> L.	Hodala	Euphorbiaceae	Shrub	Seeds oil	laxative
36	<i>Santalum album</i> L.	Ghandakolubeeru	Santalaceae	Tree	Root	Anti-inflammatory/antibacterial
37	<i>Sapinduslaurifolius</i> Vahl.	Antuvala	Sapindaceae	Tree	Fruits	Antibacterial/antifungal/emetic
38	<i>Strychnosnux-vomica</i> L.	Ettigemara	Loganiaceae	Tree	Stem bark	Antimicrobial
39	<i>Syzygiumaromaticum</i> (L) Merr. & Perry.	Lavanga	Myrtaceae	Tree	Flower buds	Anaesthetic/Antimicrobial/Antioxidant
40	<i>Tamarindusindica</i> L.	Hunase	Caesalpiniaceae	Tree	Fruit pulp	Refrigent/Digestive/analgesic
41	<i>Tarennaasiatica</i> (L.) Kuntze ex K. Schum.	Papadi	Rubiaceae	Shrub	Roots	Antimicrobial
42	<i>Tephrosiapurpurea</i> (L.) Pers.	Koggegida	Papilionaceae	Herb	Leaves	Antidote/Urinary disorder
43	<i>Toddaliaasiatica</i> (L.) Lam.	Kadumenasu	Rutaceae	Shrub	Leaves/Fruits	Antidiarrheal/Antipyretic/anti asthmatic
44	<i>Tribulusterrestris</i> L.	Naggelu	Zygophyllaceae	Herb	Aerial part	Aphrodisiac/Analgesic
45	<i>Trigonellafoenum –graecum</i> L.	Menthya	Papilionaceae	Herb	Seeds	Gastric disorder/digestive
46	<i>Tylophoraindica</i> (Burm.f.) Merr.	Adumuttadaballi	Asclepiadaceae	Twinner	Root	Anti-inflammatory/anti-inflammatory
47	<i>Wrightiatintoria</i> R.Br.	Halekudi	Apocyanaceae	Tree	Tender leaves	Antioxidant/diuretic/analgesic
48	<i>Ziziphus oenoplia</i> (L) Miller	Sodli gida	Rhamnaceae	Shrub	Fruit	Laxative/anti-inflammatory on uterus

Indigenous veterinary treatment for wound healing, infertility, dysentery, fever, antidote hematochezia and flatulence was found only one herbal formulation. Uterus prolapse, retained placenta happened during delivery time for this two herbal formulations are found. (3.1.13A-B and 3.1.12 A-B). Downer cow syndrome, keratitis and maggots in the wound having two formulations and preparations. (3.1.2A-B, 3.1.12A-B and 3.1.10A-B). But there is no reference for using dried faecal matter of elephant to recover from Downer cow syndrome but it may be the presence of calcium and phosphorous. For gastrointestinal disorder there are 6 formulations (3.1.6A-F). Various adjuvants are used for formulation like warm water, butter milk, butter, children's urine, elephant dried faeces, seed oils, common salt, resin like hingu, hen's egg, small fish and dry cow dung was used. Wound healing is a process of re-establishment of structural and functional integrity of damaged tissue^[15] for that *S. album* and *A. indica* are used in the formulation. Wound healing agent terpene component in *S. album*^[16] and antimicrobial property of *A. indica*^[17]

increasing the viability of collagen fibrils around the wound area that increases the tensile strength of the wound. This is the one of the example for scientific evidence for traditional medicine. There are 48 species of plants belonging to 33 families, twenty four families consists of single species, four families i.e., Asclepiadaceae, Cappariadaceae, Euphorbiaceae and Malvaceae consists of two species, another four families i.e., Liliaceae, Papilionaceae, Piperaceae and Solanaceae consist of three species and largest representation from family Caesalpiniaceae is of four species. Many studies of Ethno veterinary showed that the aerial parts, commonly leaves, being easy source throughout a wider period of the year unlike flower and fruit^[18-20]. Highly used parts of the plant are leaves of about 19 number, roots are 8 in number, fruits are 6 in number, stem and its bark are 4 in number, bulbs, seeds and aerial parts are 2, 3 and 4 in numbers respectively. In this study is about 39.53% of leaves are used in the different formulations.

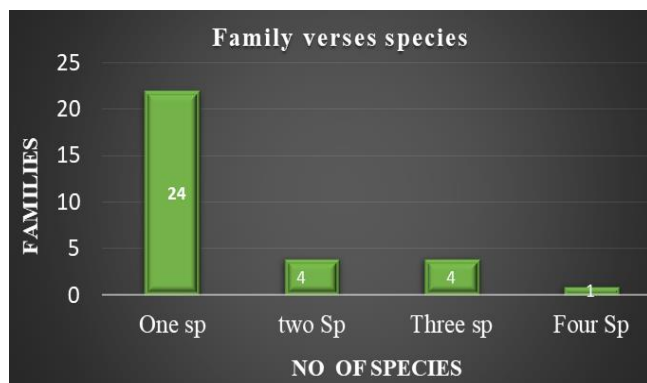


Fig 1: Family verses species

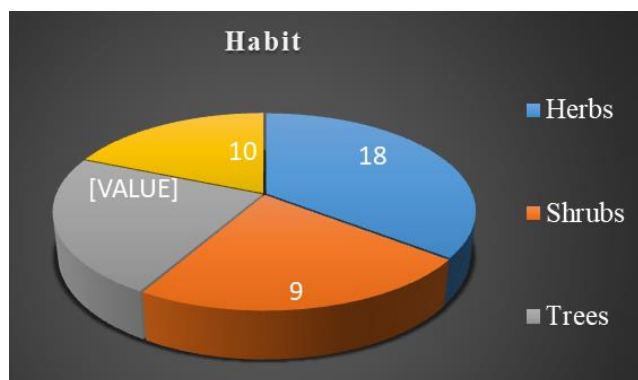


Fig 2: Habits of medicinal plants used to treat ailments

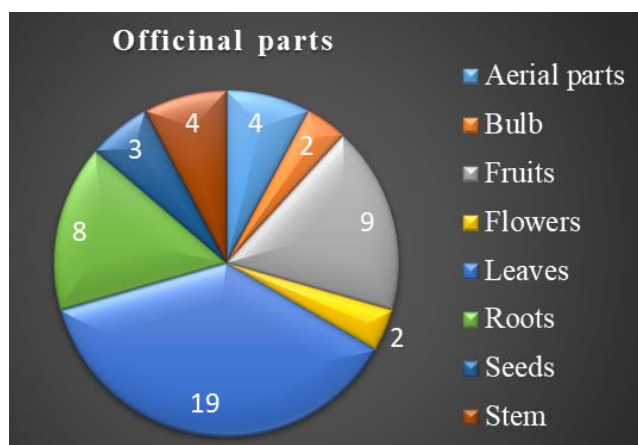


Fig 3: Official parts of medicinal plants used to treat ailments

4. Conclusion

During course of study it was found that the peoples were used medicinal plants to treat ailments of domestic animals as a primary remedies. This investigation reveals the potency of medicinal plants and tribal knowledge in the formulations, preparations and mode of administrations. The Study opens the eyes of scientific community for novel drug discovery and formulation in the field of pharmacy to serve the domestic animals are the major sources for farmers of the India as a health and wealth.

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