

LIVESTOCK DISEASES AND THE TRADITIONAL MEDICINE IN THE BUSHI AREA, KIVU PROVINCE, DEMOCRATIC REPUBLIC OF CONGO

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ABSTRACT Ethnobotanical inquiries were carried out from 1980 to 1990 to collect plants used in both veterinary and human medicines. A description of livestock diseases is made and the plant material formulas used for their treatment are inventoried. Vernacular and scientific names, parts of the plant used and instructions for use are reported. About 31 groups representing 62 vernacular names of animal diseases have been recorded and translated into English and French languages, and 124 plant species for treatment of livestock diseases identified. Plant materials are usually prescribed as maceration, infusion or decoction to be taken orally or by rectal administration and by application of ashes loco denti in the scarifications made on the ailing part of the body. Plant material is used singly or in combination. People say that the combination of several ingredients increase the chance of recovery. Moreover, a disease can be cured by one or more medicinal formulas and one formula can be used for the treatment of several diseases.

Key Words: Livestock diseases; Traditional veterinary medicine; Medicinal plants; Bushi area; Democratic Republic of Congo.

INTRODUCTION

Through several inquiries in the Bushi area about the inventory of medicinal plants (Chifundera, 1993), it has been observed that native healers practise both veterinary and human medicines. Thus it has been possible to record medicaments used for the treatment of livestock diseases. The present study aims to inventory the traditional veterinary treatment methods used in the Bushi, Kivu Province, Democratic Republic of Congo.

STUDY AREA

The Bushi area has been described in previous papers (Chifundera, 1992). Briefly, the Bushi is a wide territory of 8,192 km² located on the Western and Southern shores of Lake Kivu (28°30'-29°E and 1°30'-3°S). The Bashi tribe is of Bantu origin and its population is presently estimated to about 1,200,000 inhabitants (124 inhab/km²). Mashi is vernacular language which belongs to the D. 50 zone of Guthrie's linguistic classification (Guthrie, 1967).

The equatorial climate of the study area is temperate owing to its high altitude

which varies between 900 and 3,308 m. Subalpine meadow covers all the region and an abundant vegetation grows on the rich volcanic and ferraltic soils. Agriculture is the predominant livelihood but pasture land have decreased because of demographic increase. The number of cattle per household varies from 5 to 10 heads (Paluku, 1984). Many factors explain the animal productivity such as shortage of land, forage and budget, lack of farming education and mainly the livestock diseases which annually cause a mortality rate to vary between 19.6 and 35% (Paluku, 1984; Kambaza, *et al.*, 1985; Ntumba, 1990). In regard to the higher rate of mortality, the intervention of veterinary medicine appears to be of great importance.

MATERIAL AND METHODS

Ethnobotanical inquiries were carried out from 1980 to 1990 to collect plants for in both veterinary and human medicines. Traditional healers, cattle-breeders, shepherds and households were interviewed: each of them were asked to mention all known diseases with their symptoms and when possible, show real examples. Blood and stool samples of sick animals were collected for laboratory analysis at Lwiro (Democratic Republic of Congo) in the Laboratory of Veterinary Medicine. A modern veterinarian visited the suffering animals to make a diagnosis through direct observations. Results from the laboratory were also used to identify the diseases (Tudorascu & Petrescu, 1979; Ba-Abou Sidi, 1984).

Vernacular names of livestock diseases and medicinal plants were recorded as well as the instruction for use of drugs. Each disease or group of diseases was described by giving the vernacular, English and French names and the symptoms observed by the healers or by the households. It has been observed that a symptom can represent more than one disease. People group the diseases by the same symptoms, and consequently, apply the same treatment method to the disease of a group. When people cannot exactly recognize any difference of symptoms, a modern veterinarian has helped to differentiate the diseases and a vernacular name was given.

The vernacular name used in the identification of an unknown microbial disease can be ambiguous. In such cases, a modern veterinarian is of great importance in identifying the illness: classic bacteriological methods (Dumas, *et al.*, 1951) were used and microscopic examinations of stools and haematological tests were made to determine the diseases in question.

For the collected samples of medicinal plants, vernacular names and the plant part used were recorded. All the vernacular names were of the Mashi language (Guthrie, 1967). However, plant samples were scientifically identified by reference to the Herbarium of the Laboratory of Botany, Department of Biology at Lwiro (Democratic Republic of Congo) where voucher specimens are preserved.

RESULTS

About 31 groups representing 62 vernacular names of animal diseases have been recorded and translated into English and French languages (Appendices 1, 2, 3).

People refer to external apparent symptoms to nominate a disease which can have several causes. The diseases with the same symptoms are grouped together despite their different causes or effects and people use the same medicinal formula for their treatment.

A compilation of 124 plant species used for the treatment of livestock diseases (Appendix 4) have been made. People use the same treatment method for all animal species (cow, goat, sheep, hen). When an animal is ill, the household looks for medicaments by consulting a native healer. Plant materials are usually prescribed as maceration, infusion or decoction to be administered orally or rectally and by application of ashes *loco denti* in the scarifications made on the ailing part of the body. Plant material is used singly or in combination. People say that the combination of several ingredients increase the chance of recovery. Moreover, a disease can be cured by one or more medicinal formulas and one formula can be used for the treatment of several diseases.

DISCUSSION AND CONCLUSION

This study records the indigenous knowledge on the farming activities in the Bushi area. The results obtained from intensive inquiries reveal interesting aspects of the traditional methods for the treatment of livestock diseases, provide a basis of a design concept toward structuring and improving the problems which the Bushi farming activities face (Schmitz, 1985).

Cattle is used in economic transactions and social exchanges to cover the dowry and to maintain relationship between members of the social groups in heritage, payment of tenure and to preserve the honour for belonging to the higher social rank. But the income from husbandry is expected if the animals are in a good health conditions. For this reason, people have developed a range of methods for the treatment of livestock diseases.

The efficacy of all medicinal formulas mentioned in the treatment methods is not yet ascertained. But the collection of pharmacognosical data from this study can provide a basis for the integration of folk uses in the conventional veterinary medicine. This is to say that traditional medicine can be a real source for insights into material from which the discovery of new compounds of medicinal values may be made (Farnsworth *et al.*, 1986; Akerele, 1984, 1988, 1992; Gujar, 1990; Galeffi & Marini-Bettolo, 1988). For this, phytochemical screening and biological assays of plant drugs must be carried out to display the active principles (Gujar, 1990). The laboratory work is in progress to evaluate the efficacy of some plant extracts: antibacterial, antivenomous, anthelmintic, acaricidal, antiparasitic and molluscicidal plants are under evaluation in laboratory conditions (Chifundera, *et al.*, 1993). Some substances, such as alkaloids, tannins, lignans, saponins, quinones, phenols, phytoecdysons and various glycosides have been isolated and pointed out as substances which are endowed with biological activities (Chifundera, *et al.*, 1993; Scalbert, 1991).

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Appendix 1. Livestock diseases and the traditional treatment methods

1. Arthritis, fracture, neuralgia, rheumatism, sprain

French:

Arthrite, fracture, névralgie, rhumatisme, foulure

Vernacular names:

Bulabuke (sprain), Buvune (fracture), Ihasha (arthritis, neuralgia, rheumatism). These names are not synonyms. They designate different diseases as indicated in parenthesis.

Symptoms:

The animal has a limp.

Treatment:

Powdered leaves of *Trema orientalis* and the stem and root barks of *Cordyline terminalis* are crushed and mixed with the oil of *Ricinus communis* for local application. Heated leaves of *Vernonia kirungae* and the stem of *Musa sapientum* are used for massage of ailing part of the body. The whole plants *Erucastrum arabicum*, *Kotschya africana*, *Senecio mannii*, *Tetradenia riparia*, *Celosia trigyna* and *Cissampelos mucronata* are crushed, mixed and rubbed into the scarifications made on the body. Dried flowers of *Tetradenia riparia* and the whole plant of *Ricinus communis* and *Cissampelos mucronata* are incinerated and the ashes are mixed with the oil of *Ricinus communis* to rub into the scarifications made on the ailing part of the body.

2. Burns

French: Brûlures

Vernacular name: Muliro

Symptoms:

Visible wounds or blisters on the body.

Treatment:

Crushed leaves from *Gynura ruwenzoriensis*, pieces of banana peel, *Musa paradisiaca* and ashes of leaves from *Albizia adianthifolia* are mixed together and rubbed on the blisters. The sap of *Aloe lateritia* is also used to treat the burns.

3. Alopecia, Cutaneous lesions, dermatosis, mycosis, scabies

French:

Alopécie, lésions cutanées, dermatose, mycose, gale

Vernacular names:

Lujovu (alopecia), Lushomyo (cutaneous lesions), Kayonga (dermatitis, dermatosis), Lubenja (mycosis), Luhere (scabies).

These names are not synonyms. They designate different diseases which are grouped together because they exhibit similar symptoms. Cutaneous lesions are due to the infection of the skin

which causes dermatosis. Scabies are due to mites and alopecia may be due to malnutrition and avitaminosis.

Symptoms:

This group of diseases is recognized by the presence of wounds on the skin and the loss of hair.

Treatment:

Calcined fruits from *Solanum sycambriifolium* are mixed with the oil from *Ricinus communis* to rub the body. Ground leaves of *Lantana camara* and *Urena lobata* are rubbed on the body. Application loco denti of the oil of *Ricinus communis* is also made.

4. Tick and mite

French: Tique et mite

Vernacular names:

Ciguhu (Tick), Kaguhu (mite). After collection and identification of tick specimens, the species in question was *Amblyomma variegatum*. People confuse ticks and mites (Kaguhu), and think that mites are small ticks (young or subadults).

Symptoms:

Presence of ticks or mites on the body.

Treatment:

The following acaricides are used: the whole plant *Tetradenia riparia* and leaves from *Vernonia amygdalina* are crushed to make a paste to be rubbed on the body for destroying the ectoparasites. The macerate of crushed leaves of *Tephrosia vogelii* is used to wash the body for killing the ectoparasites. The crushed whole plant *Chrysanthemum cinerariifolium* is mixed with the palm oil (*Elaeis guineense*) for ointment.

5. Blindness, conjunctivitis and related ocular affections

French:

Aveuglement, Cécité, conjonctivite et affections oculaires associées

Vernacular names:

Buhurha, Masu g'alaka. When the animal cannot see (is blind), people use a unique word, "Buhurha," which means "loss of sight." But when there are ecchymosis or bruise and lacrymogenic secretion, they call it "Masu g'alaka," a plural name which designates an infection of eyes. In so doing, a same medication method is applied to this group of diseases.

Treatment:

Stem barks of *Erythrina abyssinica* are crushed and added to the *Ricinus communis* crushed fruits or its oil to coat the eyes. Leaves or whole plant of *Bothriocline ugandensis*, *Dichrocephala integrifolia*, *Ageratum conyzoides*, *Lantana trifolia*, *Commelina diffusa*, *Spilanthes mauritiana*, *Sporobolus sp.* are ground, packed up with a leaf from *Ficus thonningii* and water is added to make drops for eyes. Fresh pods of *Capsicum frutescens* are ground and mixed with the stool of *Gorilla gorilla* (or a monkey) and water is added to the preparation to make eyedrops.

6. Snake bites

French:

Morsures de serpent, envenimation

Vernacular name: Majoka-joka

Symptoms:

Swelling, inflation, necrosis, oedema, pain.

Treatment:

Maceration made with the whole plants: *Solanum nigrum*, *Amaranthus lividus*, *Crassocephalum montuosum*, *Brillantaisia cicatricosa*, is orally administered. Viper bites are treated with an aqueous extract from fruits of *Lantana camara* or *Lantana trifolia*.

7. Lesions between the toes

French: Panaris interdigital

Vernacular name: Bulenge

Symptoms: Wounds between the toes.

Treatment:

Applied locally, twice a day, a maceration made with the whole plant *Lagenaria abyssinica*. The juice from the fresh crushed fruits of *Solanum sysymbriifolium*, *Dissotis brazzae* and the oil of *Ricinus communis* are applied on the lesions.

8. Anal prolapse, hernia

French: Prolapsus anal

Vernacular name: Kulerha omugongo

Symptoms: Invagination of the rectum

Treatment:

Administered orally the maceration of the whole plants *Eragrostis tenuifolia*, *Piper capense*, *Lycopodium clavatum*, *Basella alba* and *Clerodendrum myricoides*.

9. Mammitis, mastitis

French: Mammite, mastite

Vernacular names: Cibeba, byufa, mpanga

Mammitis (cibeba) is recognized by superficial wounds, and mastitis (byufa, mpanga) which is an inflammation of the mammary glands, is recognized by an induration or an inflation of the breast.

Symptoms:

Wounds, inflation, induration of the breast.

Treatment:

Ground leaves of *Astripomoea grantii*, *Hypericum revolutum*, *Pteris similis*, *Lactuca attenuata*, *Cryptolepis oblingifolia* and *Sonchus asper*, are mixed with clay to make a paste for massaging of the breast every morning and evening.

10. Mouth lesions

French: Fièvre vitulaire, lésions buccales

Vernacular names:

The lesions in the mouth (wound, ulcer, stomatitis) are designated by the following names: Munyoro (stomatitis), Mwegesi (ulcer or wound in the mouth).

Symptoms:

Presence of wounds in the mouth accompanied by fever and some cases, partial paralysis (paresis) named Budorhole in the Mashi language.

Treatment:

Drops prepared with ground fruits of *Lagenaria abyssinica* and leaves of *Indigofera arrecta* and *Tetradenia riparia* are applied for rubbing the lesions. Copper sulfate or indigenous salt (potash of plant origin) are used to dry the wounds.

11. Adenitis, piroplasmosis, theileriasis

French: Adénite, piroplasmose, theileriose

Vernacular names: Cibagaliro

Symptoms: Inflation of ganglions.

Ganglion is recognized by people by the touch. The inflation is caused by many infectious diseases, but people mention the external symptom which is the “inflation of the ganglion.” This apparent symptom is used to cover all the other related diseases such as adenitis.

Treatment:

One litre of a maceration prepared with the leaves of *Mukia maderaspatana*, *Clerodendrum rotundifolium*, *Phytolacca dodecandra*, *Lagenaria abyssinica* and *Cinchona ledgeriana*, is administered orally and the marc given to eat twice a day. A maceration of leaves of *Vernonia amygdalina*, *Cinchona ledgeriana* and *Guizotia scabra*, is given orally and by nasal drops. After one week treatment, one litre of a maceration made with the leaves of *Lantana camara* is given orally too. Finally, it is necessary to cauterize the ganglion with the hot cow pot.

12. Plague, anthrax

French: Peste bovine, charbon

Vernacular names: Tonga, Luhiga, Cahira (plague), Nzirondo, Kasingo, Budaka (anthrax).

Symptoms:

When people notice a sudden and massive mortality (which they call Cahira) in the herd, they call it by several names designating the same “supposed” disease which is usually an epidemic of plague or anthrax.

Treatment:

One litre of the maceration, a day is orally administered prepared with the leaves or whole plant of *Tetradenia riparia*, *Gynura ruwenzoriensis*, *Dichrocephala integrifolia*, *Spilanthes mauritiana* and *Senecio mannii*. Hot leaves of *Euphorbia tirucalli* are crushed and the juice is applied as nasal or ear drops to the sick animal. One litre of a decoction of leaves of *Euphorbia tirucalli*, *Lobelia mildbraedii*, *Senecio mannii*, *Mukia maderaspatana* and *Vigna vexillata*, is orally given twice a day. In addition, nasal and ear drops are prepared with crushed leaves of *Astripomoea grantii*, the whole plant *Plectranthus barbatus* and *Microglossa angolensis*. One bottle of a maceration prepared with the whole plant *Aloe lateritia* is used to wash the meat to be eaten by the people after the death of the animal.

13. Pneumonia, pulmonary infections, pleuresia, tuberculosis, chronic cough

French: Pneumonie, infections pulmonaires, pleurésie, tuberculose, toux chronique

Vernacular names: Mwijimbwe, Lugoholo.

Symptoms:

Cough, immobility, hyperventilation.

Treatment:

Ground leaves of *Melanthera scandens* and *Pteris similis*, is first added to the crushed seeds of *Nicotiana tabacum* and *Sorghum bicolor*; then the indigenous salt (potash of plant origin) to water to make a mixture to be orally administered twice a day by 250 ml doses. The formula for the treatment of helminthiasis is also used to cure tuberculosis and chronic cough (see No. 20)

14. Sterility, estrual disorder

French: Stérilité, désordre dans le cycle oestral

Vernacular name: Bugumba

Symptoms: Infertility

Treatment:

The promotion of pregnancy (estrus), sexual impulse and fertility is called “Kubuhira or kuyirula” and is performed by the following medication:

Ground leaves of *Basella alba* and fruits of *Solanum sysymbriifolium* and those of *Phoenix reclinata*, are rubbed on the human hand to introduce the whole preparation into the animal vagina every morning. However, crushed roots of *Entanda abyssinica* are also used to make a maceration for the vaginal administration. Vaginal administration of the drops and oral application of the maceration prepared from the stem barks of *Dracaena arborea* may be used. Flowers of *Urtica massaica*, *Musa sapientum*, *Gladiolus psittacinus*, *Dissotis brazzae* and *Loudetia simplex* are crushed and mixed and then administered vaginally.

15. Rabies, madness, anaplasmosis

French: Rage, folie, anaplasnose

Vernacular names: Isirhe

Treatment:

One litre of a maceration made from each of the following plants is orally given by the single dose in the morning: *Mukia maderaspatana*, *Astripomoea grantii*, *Lobelia mildbraedii*, *Ficus lutea*, *Lagenaria abyssinica*, *Trema orientalis*, *Setaria megaphylla*, *Pycnostachys ericirosenii*, *Tagetes minuta*, *Koschya africana*, *Bothriocline ugandensis*, *Vernonia jugalis*, *Harungana madagascariensis*, *Acrocephalus galeopsifolium*, *Plectranthus barbatus*, *Berkheya noldeae*, *Hydrocotyle mannii*, *Nicotiana tabacum*, *Cinchona ledgeriana*, *Piper capense*, *Andropogon canaliculatus*, *Leucas deflexa*, *Celosia trigyna*, *Clerodendrum rotundifolium* and *Ficus sur*.

16. Diphtheria (tonsillitis), gingivitis, glossitis, candidosis

French:

Diphthérie, gingivite, glossite, candidose

Vernacular names:

Namuguka, or bigoga (diphtheria, tonsillitis), ivunja (gingivitis, glossitis, candidosis).

Symptoms:

Salivation, nasal regurgitation, deglutition, presence of vesicula in the mouth, fever.

Treatment:

Scarifications are made on the jaw in which the ashes of *Nicotiana tabacum* are rubbed. A maceration prepared from the leaves of *Erythrina abyssinica*, *Tetradenia riparia* and *Indigofera arrecta*, is orally given.

17. Distomatosis

French: distomatose, douve de foie

Vernacular name: Kadiku

Symptoms: diarrhoea, jaundice.

Treatment:

The distomatosis is an infection of the bile duct by flukes (*Fasciola hepatica*). One litre of a maceration made with the ashes from *Dodonea viscosa* and *Nymphaea calliantha*, is orally given after adding the indigenous salt (potash of plant origin) and copper sulfate. Ashes are also given to lick.

18. Gastro-enteritis

French: gastro-entérite

Vernacular names: Kadorha

Symptoms: diarrhoea

Treatment:

One litre of a maceration made from a mixture of ground leaves of the following plants is orally given: *Lobelia mildbraedii*, *Lagenaria abyssinica*, *Trema orientalis*, *Plectranthus barbatus*, *Pycnostachys rici-rosenii*, *Mukia maderaspatana*, *Bothriocline ugandensis*, *Cinchona ledgeriana*, *Berkheya spekeana*, *Hypericum revolutum*, *Harungana madagascariensis*, *Hydrocotyle mannii*, *Nicotiana tabacum*, *Piper capense* and *Ensete ventricosum*. Sometimes, a powder from the fruits of *Sorghum bicolor* is added to the mixture for enhancing the effect. This formula is also used for the treatment of anaplasmosis and babesiosis (see No. 27). A remedy made from crushed leaves of *Ficus thonningii* or *Ficus exasperata*, the maceration made with the stem barks of *Myrica kandtiana* and the infusion prepared by the fruits of *Phaseolus vulgaris*, is orally given to the suffering animal.

19. Coccidiosis, dysentery, diarrhoea

French: Coccidiose, dysentérie, diarrhée

Vernacular names: Curo (coccidiose), Mukunguru, Mushunzi (dysenterie), Mushole (diarrhoea)

Symptoms:

Bloody stool, liquid feces many times a day.

Treatment:

One litre of a maceration or decoction made from the following plants is orally given twice a day: *Cinchona ledgeriana* (stem barks), *Urena lobata*, *Rhynchelytrum repens*, *Psidium guajava*, *Pycnostachys erici-rosenii* (leaves), *Bridelia micrantha*, *Hydrocotyle mannii* and *Centella asiatica* (whole plants). Another formula is made by combining the crushed leaves of *Sida rhombifolia* and *Clerodendrum myricoides* (these formulas are also used for the treatment of schistosomiasis, see No. 31).

20. Helminthiasis, intestinal parasitosis

French: helminthiase, vers intestinaux

Vernacular name: Nzoka

Symptoms:

Presence of worms, bloody stool, diarrhoea.

Treatment:

One litre of a maceration made from the following plants is orally given twice a day: *Berkheya spekeana*, *Melanthera scandens*, *Tagetes minuta* (leaves), *Coix lacrima-jobi* (roots), *Tephrosia vogelii*, *Vernonia amygdalina*, *Celosia trigyna* (whole plants) and rhizomes of fern (*Nephrodium filix-mas*). Nasal drops are made from crushed leaves of *Melanthera scandens* and *Tagetes minuta*. Powder of leaves of *Nymphaea calliantha*, *Tagetes minuta* and calcined leaves of *Lobelia mildbraedii*, are administered as a lick. This formula is also used

to cure tuberculosis and cough, see No. 13).

21. Abortion, brucellosis

French: Avortement vibriionien, brucellose

Vernacular names:

Lumomo (abortion), luhangiro (brucellosis).

Symptoms:

Interruption of the pregnancy.

Treatment:

One litre of a maceration made from the crushed leaves of the following plants is orally given twice a day: *Dodonea viscosa*, *Hibiscus noldeae*, *Cyathula uncinulata*, *Chenopodium procerum* and *Crassocephalum rubens*.

22. Placenta retention

French: rétention placentaire

Vernacular names:

Cigozi, Muziba, Muziha. Cigozi means “rope” which designates the placenta (muziba or muziha).

Symptoms:

Visible piece of the placenta.

Treatment:

Nasal drops are made from a mixture of the ground seeds of *Sorghum bicolor*; the leaves of *Crassocephalum rubens* and *Berkheya spekeana*. A decoction made from the ground leaves of *Senecio mannii*, *Lantana camera* and *Ficus lutea*, is used to massage the abdomen and one litre twice a day orally administered.

23. Post-partum paraplegia

French: Paraplégie post-natale, paralysie des membres inférieurs après mise-bas

Vernacular name: Kuyirula

Symptoms:

Paralysis of lower limbs after delivery.

Treatment:

One litre of a maceration made from the whole plant *Cuscuta kilimandjari* and the roots of *Ensete ventricosum*, is orally given once a day.

24. Sheep-pox, sinusitis, blue tongue

French: Clavelée, sinusite

Vernacular name: Muzerezi

Symptoms:

Increase of excreta in the nose.

Treatment:

Nasal drops are prepared from the ground leaves of *Tetradenia riparia*, *Indigofera arrecta*, *Tagetes minuta*, *Melanthera scandens* and *Lagenaria siceraria*. Nasal drops are also made from the decoction of the seeds of *Sorghum bicolor*. Mineral substances such as copper sulfate and potash are given to lick.

25. Feeling dizzy

French: tournis, vertige

Vernacular name: cizunguzungu

Symptoms: dizzy

Treatment:

Orally administer the maceration from the whole plant *Annona muricata*. Cover the eyes with the leaves of the same plant or use a piece of cloth.

26. Toxoplasmosis

French: toxoplasmose

Vernacular name: Rutandara

Symptoms:

Teeth-grinding, trembling, dyspnea, stillbirth.

Treatment:

The juice from the crushed plant *Cynodon dactylon* is orally given.

27. Babesiosis, constipation

French: Babésiose, constipation

Vernacular names:

Mududu (babesiosis), Kagozi or mparhi (constipation).

The term, kagozi, means the difficulty to produce stool (constipation) and mududu designates "red urine" due to babesiosis.

Symptoms:

Presence of red urine with difficulty to produce the stool.

Treatment:

One litre of a decoction made from the crushed leaves of *Cyperus papyrus*, *Maytenus arbutifolia*, *Caesalpinia* sp, *Momordica foetida*, *Acacia sieberiana*, *Dovyalis macrocalyx* and

Lagenaria siceraria, is orally administered. A maceration made from the whole plants: *Momordica pterocarpa*, *Clausena anisata*, *Gouania longispicata*, *Rhoicissus tridentata* and *Erythrococca oleracea* is given to drink. The juice from the roots of *Momordica foetida*, *Vernonia amygdalina* and *Dalbergia lactea* is orally given.

28. Galactorrhoea

French: Galactorrhée, lactation exagérée

Vernacular name: Amonka manji

Symptoms:

Abundant discharge or flow of lactation observed after the death of newborn.

Treatment:

Cooked leaves of *Acanthus pubescens* are fed to the female suffering from galactorrhoea to stop the flow (kuyumya amonka, kubalaza amonka).

29. Cyst

French: Kyste

Vernacular name: Muziha

Symptom: Inflation

Treatment: Cauterization of the cyst.

30. Agalactia

French: Insuffisance lactée

Vernacular name: Kuziba, kubula amonka

Symptoms: absence of lactation after delivery.

Treatment:

The treatment method is called “Kuzibula or kuduba”: A galactogenic mixture is made with the ground leaves of the following plants: *Guizotia scabra*, *Acrocephalus galeopsifolium*, *Hypericum revolutum*, *Clerodendrum rotundifolium*, and given to eat every morning and evening. One litre of a maceration prepared with the whole plants: *Portulacca oleracea*, *Euphorbia hirta*, *Ficus sur*, *Vernonia kirungae*, *Cuscuta kilimandjari* and the roots of *Ensete ventricosum*, is orally given twice a day before and after delivery. The maceration made from the following plants are also used in the same way: *Lobelia mildbraedii*, *Rumex usambarensis*, *Oxalis corniculata*, *Harungana madagascariensis*, *Bothriocline ugandensis*, *Leucas deflexa*, *Leonotis nepetifolia*, *Gynura ruwenzoriensis*, *Helichrysum fruticosum*, *Vernonia jugalis*, *Biophytum zenkeri*, *Vigna vexillata*, *Phyllanthus capillaris* and *Piper umbellatum*, to which the barks of bananas (*Musa sapientum*) are added.

31. Schistosomiasis

French: bilharziose, schistosomiase

Vernacular name: kabunda

Symptoms:

Inflation of the abdomen.

Treatment:

One litre of a maceration or decoction made from the following plants is orally given twice a day: *Cinchona ledgeriana* (stem barks), *Urena lobata*, *Rhynchelytrum repens*, *Psidium guajava*, *Pycnostachys erici-rosenii* (leaves), *Bridelia micrantha*, *Hydrocotyle mannii* and *Centella asiatica* (whole plants). Another formula is made by combining the crushed leaves of *Sida rhombifolia* and *Clerodendrum myricoides* (these formulas are also used for the treatment of coccidiosis and dysentery, see No. 19).

Appendix 2. English, French and Vernacular names of livestock diseases recorded in the Bushi area, the number after the English name refers is that of Appendix 1.

English names	French names	Vernacular names
1. Abortion (21)	Avortement	<i>Lumomo</i>
2. Adenitis (11)	Adénite	<i>Cibagaliro</i>
3. Agalactia (30)	Absence de lactation	<i>Kuyuma amonka, Kuziba</i>
4. Alopecia (3)	Alopécie	<i>Lujovu</i>
5. Anal prolapse (8)	Prolapsus anal	<i>Kulerha omugongo</i>
6. Anaplasmosis (15)	Anaplasmosé	<i>Isirhe</i>
7. Anthrax (12)	Charbon	<i>Nzirondo, Kasingo, Budaka</i>
8. Arthritis (1)	Arthrite	<i>Ihasha</i>
9. Babesiosis (27)	Babésiose	<i>Mududu</i>
10. Blindness (5)	Aveuglement, Cécité	<i>Buhurha</i>
11. Blue tongue (24)	Langue bleue	<i>Muzerezi</i>
12. Brucellosis (21)	Brucellose	<i>Luhangiro</i>
13. <i>Burn</i> (2)	Brûlure	<i>Muliro</i>
14. Candidosis (16)	Candidose	<i>Ivunja</i>
15. Coccidiosis (19)	Coccidiose	<i>Curo</i>
16. Conjunctivitis (5)	Conjunctivite	<i>Masu galeka</i>
17. Constipation (27)	Constipation	<i>Kagozi, Mparhi</i>
18. Cough (13)	Toux	<i>Mwijimbwe</i>
19. Cutaneous lesions (3)	Lésions cutanées	<i>Lushomyo</i>
20. Cyst (29)	Kyste	<i>Nyanguku, Muziha</i>
21. Dermatitis (3)	Dermatose	<i>Kayonga</i>
22. Diarrhoea (19)	Diarrhée	<i>Mushole</i>
23. Diphtheria (16)	Diphthérie	<i>Bigoga, Namuguka</i>
24. Distomatosis (17)	Distomatose	<i>Kadiku</i>
25. Dizzy (25)	Tournois, Vertige	<i>Cizunguzungu</i>
26. Dysentery (19)	Dysentérie	<i>Mukunguru, Mushunzi</i>
27. Estrual disorder (14)	Désordre du cycle oestral	<i>Bugumba</i>
28. Fracture (1)	Fracture	<i>Buvune</i>
29. Galactorrhoea (28)	Lactation exagérée	<i>Monkamanji</i>
30. Gastro-enteritis (18)	Gastro-entérite	<i>Kadurha</i>
31. Gingivitis (16)	Gingivite	<i>Ivunja</i>
32. Glossitis (16)	Glossite	<i>Ivunja</i>
33. Helminthiasis (20)	Helminthiase	<i>Nzoka</i>
34. Hernia (8)	Hernie	<i>Kulerha omugongo</i>
35. Intestinal parasitosis (20)	Vers intestinaux	<i>Nzoka</i>
36. Lesions between toes (7)	Panaris interdigital	<i>Bulenge</i>
37. Madness (15)	Folie	<i>Isirhe</i>
38. Mammitis (9)	Mammité	<i>Cibeba</i>
39. Mastitis (9)	Mastite	<i>Byufa, Mpanga</i>
40. Mite (4)	Mite	<i>Kaguhu</i>
41. Mycosis (3)	Mycose	<i>Lubenja</i>
42. Neuralgia (1)	Névralgie sciatique	<i>Ihasha</i>
43. Ocular affections (5)	Affection oculaires	<i>Masu galaka</i>
44. Paraplegia (23)	Paraplégie	<i>Kuyirula</i>
45. Paresis (10)	Parésie	<i>Budorhole</i>
46. Piroplasmosis	Piroplasmose	<i>Cibagaliro</i>
47. Placenta retention (22)	Rétention placentaire	<i>Cigozi, Muziha, Maziba</i>

(continued)

English names	French names	Vernacular names
48. Plague (12)	Peste bovine	<i>Luhiga, Tonga, Cahira</i>
49. Pleuresia (13)	Pleurésie	<i>Mwijimbwe</i>
50. Pneumonia (13)	Pneumonie	<i>Mwijimbwe</i>
51. Pulmonary infections (13)	Affections pulmonaires	<i>Mwijimbwe</i>
52. Rabies (15)	Rage	<i>Isirhe</i>
53. Rheumatism (1)	Rhumatisme	<i>Ihasha</i>
54. Scabies (3)	Gale	<i>Luhere</i>
55. Schistosomiasis (31)	Schistosomiase	<i>Kabubda</i>
56. Sheep-pox (24)	Clavelée	<i>Muzerezi</i>
57. Sinusitis (24)	Sinusite	<i>Muzerezi</i>
58. Snake-bite (6)	Morsure de serpent	<i>Majoka-joka</i>
59. Sprain (1)	Entorse	<i>Bulabuke</i>
60. Sterility (14)	Stérilité	<i>Bugumba</i>
61. Stomatitis (10)	Stomatite	<i>Munyoro, Mwegesi</i>
62. Theileriasis (11)	Theileriose	<i>Cibagaliro</i>
63. Tick (4)	Tique	<i>Ciguhu</i>
64. Tonsillitis (16)	Tonsillite	<i>Bigoga</i>
65. Toxoplasmosis (26)	Toxoplasmose	<i>Rutandara</i>
66. Tuberculosis (13)	Tuberculose	<i>Lugoholo</i>

Appendix 3. Vernacular names of livestock diseases with reference numbers to Appendix 2.

<i>Bigoga</i> 23, 64	<i>Kadiku</i> 24	<i>Monka manji</i> 29
<i>Budaka</i> 7	<i>Kadurha</i> 30	<i>Mpanga</i> 39
<i>Budorhole</i> 45	<i>Kagozi</i> 17	<i>Mparhi</i> 17
<i>Bugumba</i> 27, 60	<i>Kaguhu</i> 40	<i>Mududu</i> 9
<i>Buhurha</i> 10, 16	<i>Kasingo</i> 7	<i>Mukunguru</i> 26
<i>Bulabuke</i> 59	<i>Kayonga</i> 21	<i>Muliro</i> 13
<i>Bulenge</i> 36	<i>Kulerha omugongo</i> 5, 34	<i>Munyoro</i> 61
<i>Buvune</i> 28	<i>Kuyirula</i> 44	<i>Mushole</i> 22
<i>Byufa</i> 39	<i>Kuyuma amonka</i> 3	<i>Mushunzi</i> 26
<i>Cahira</i> 48	<i>Kuziba</i> 3	<i>Muzerezi</i> 11, 56, 57
<i>Cibagaliro</i> 2, 46, 62	<i>Lubenja</i> 41	<i>Muziba</i> 20, 47
<i>Cibeba</i> 38	<i>Lugoholo</i> 66	<i>Muziha</i> 47
<i>Cigozi</i> 47	<i>Luhangiro</i> 12	<i>Mwegesi</i> 61
<i>Ciguhu</i> 63	<i>Luhere</i> 54	<i>Mwijimbwe</i> 18, 49, 50, 51
<i>Cizunguzungu</i> 25	<i>Luhiga</i> 48	<i>Namuguka</i> 23
<i>Curo</i> 15	<i>Lujovu</i> 4	<i>Nyanguku</i> 20
<i>Ihasha</i> 8, 42, 53	<i>Lunomo</i> 1	<i>Nzirondo</i> 7
<i>Isirhe</i> 6, 37, 52	<i>Lushomyo</i> 19	<i>Nzoka</i> 33, 35
<i>Ivunja</i> 14, 31, 32	<i>Majoka-joka</i> 58	<i>Rutandara</i> 65
<i>Kabunda</i> 55	<i>Masu g'alaka</i> 16, 43	<i>Tonga</i> 58

Appendix 4. Checklist of veterinary medicinal plants, their scientific and vernacular names and the treated diseases with reference number to Appendix 1.

- Acacia sieberiana* DC (Mimosaceae), *Mugenge*, 27
Acanthus pubescens (OLIV) ENGL (Acanthaceae), *Lurhabu*, 28
Acrocephalus galeopsifolium BAK (Lamiaceae), *Lugangala*, 15, 30
Ageratum conyzoides L (Asteraceae), *Kahyole*, *Ishomola*, 5
Albizia adianthifolia (SCHUM) WRIGHT (Mimosaceae), *Hikungushebeye*, 2
Aloe lateritia ENGL (Liliaceae), *Cizimyamuliro*, 2, 12
Amaranthus lividus L (Amaranthaceae), *Lurhendebuka*, 6
Andropogon canaliculatus SCHUM (Poaceae), *Mwehwe*, 15
Annona muricata L (Annonaceae), *Mustaferi*, 25
Astripomoea grantii (RENDLE) VERDC (Convolvulaceae), *Cinenwa*, 9, 12, 15
Basella alba L (Basellaceae), *Nderema*, 8, 14
Berkheya spekeana OLIV (Asteraceae), *Cigwigwi*, *Ngwigwi*, 15, 18, 20, 22
Biophytum zenkeri GUILL (Oxalidaceae), *Nabwifomeke*, 30
Bothriocline ugandensis (MOORE) GILB (Asteraceae), *Cirhabirhabi*, 5, 15, 18, 39
Bridelia micrantha (HOCHST) BAILLON (Euphorbiaceae), *Mujimbu*, 19, 31
Brillantaisia cicatricosa LINDAU (Acanthaceae), *Namadwi*, *Mushegemanjoka*, 6
Caesalpinia sp (Caesalpinaceae), *Mugenge*, 27
Capsicum frutescens L (Solanaceae), *Lushenda*, 5
Celosia trigyna L (Amaranthaceae), *Mujungwe*, 1, 15, 20
Centella asiatica (L) URB (Apiaceae), *Kurhwirikuguma*, 19, 31
Chenopodium procerum HOCHST ex MOCQ (Chenopodiaceae), *Mugunduzimu*, 21
Chrysanthemum cinerifolium VIS (Asteraceae), *Piretre*, 4
Cinchona ledgeriana MOENS ex TRIM (Rubiaceae), *Kangina*, 11, 15, 18, 19, 31
Cissampelos mucronata RICH (Menispermaceae), *Cibombwe*, 1
Clausena anisata (WILD) HOOK ex BENTH (Rutaceae), *Kano*, *Ntana*, 27
Clerodendrum myricoides (HOCHST) R.BR. (Verbenaceae), *Mukuzanyana*, 8, 19, 31
Clerodendrum rotundifolium OLIV (Verbenaceae), *Cinyankulu*, 11, 15, 30
Coix lacrima-jobi L (Poaceae), *Mashangu*, 20
Commelina diffusa BURM (Commelinaceae), *Mudege*, 5
Cordyline terminalis KUNTH (Agavaceae), *Kaharhi*, 1
Crassocephalum montuosum MOORE (Asteraceae), *Mufulubindi*, 6
Crassocephalum rubens (JUSS ex JACQ) MOORE (Asteraceae), *Mufulubindi*, 21, 22
Cryptolepis oblongifolia (MEISSN) SCHLTR (Asclepiadaceae), *Munyamarha*, 9
Cuscuta kilimandjari OLIV (Convolvulaceae), *Lumererahaha*, 23, 30
Cyathula uncinulata (SCHRAD) SCHINZ (Amaranthaceae), *Igwarha*, 21
Cynodon dactylon (L) PERS (Poaceae), *Lurhendezi*, 26
Cyperus papyrus L (Cyperaceae), *Migugune*, *Nfinjo*, 27
Dalbergia lactea VATKE (Fabaceae), *Mungobole*, 27
Dichrocephala integrifolia (L) KUNTZE (Asteraceae), *Citundambuga*, *Tundoola*, 5, 12
Dissotis brazzae COGN (Meiastomataceae), *Mungobole* 7, 14
Dodonea viscosa (L) JACQ (Sapindaceae), *Musambya*, *Kibunda*, 17, 21
Dovyalis macrocalyx (OLIV) WARB (Fiacourtiaceae), *Mugenge*, 27
Dracaena arborea (WILD) LINK (Agavaceae), *Mukonzi*, 14
Elaeis guineense JACQ (Arecaceae), *Mumesa*, 4
Ensete ventricosum (WELW) CHEESMAN (Musaceae), *Cirembo*, 18, 23, 30
Entanda abyssinica STEUD ex RCH (Mimosaceae) *Mushangeshange*. *Cishonji*, 14
Eragrostis tenuifolia (RICH) STEUD (Poaceae), *Bwikalabalume*, 8

- Erucastrum arabicum* FISCHER ex MEYER (Brassicaceae), *Lujinji*, 1
Erythrina abyssinica LAM (Fabaceae), *Cigohwa*, 5, 16
Erythrococca oleracea PAX (Euphorbiaceae), *Kantindi*, 27
Euphorbia hirta L (Euphorbiaceae), *Mpangula*, 30
Euphorbia tirucalli L (Euphorbiaceae), *Karhoza*, *Kalimbwa*, 12
Ficus exasperata VAHL (Moraceae), *Mulehe*, 18
Ficus lutea VAHL (Moraceae), *Mulehe*, *Muhumbahumba*, 15, 22
Ficus sur FORSSKAL (Moraceae), *Mulehe*, 15, 30
Ficus thonningii BLUME (Moraceae), *Mutudu*, 5, 18
Gladiolus psittacinus HOOK (Iridaceae), *Cishungushungu*, 14
Gouania longispicata ENGL (Rhamnaceae), *Muvura*, 27
Guizotia scabra (VIS) CHIOV (Asteraceae), *Cimbehe*, 11, 30
Gynura ruwenzoriensis (MOORE) MOORE (Asteraceae), *Mafambohwe*, 2, 12, 30
Harungana madagascariensis LAM ex POIR (Clusiaceae), *Ndwamuko*, *Mushombo*, 15, 18, 30
Helichrysum fruticosum (FORSSK) VATKE (Asteraceae), *Budwiko*, *Kalerhanshule*, 30
Hibiscus noldeae BAKER (Malvaceae), *Mukulu-olibyoya*, *Mukeranshungwe*, 21
Hydrocotyle mannii HOOK (Apiaceae), *Ntimuka*, 15, 18, 19, 31
Hypericum revolutum VAHL (Clusiaceae), *Kahwera*, 9, 18, 30
Indigofera arrecta HOCHST ex RICH (Fabaceae), *Kasholoza*, *Kavuna-nfuka*, 10, 16, 24
Kotschyia africana ENGL (Fabaceae), *Lwazi*, 1, 15
Lactuca attenuata STEBBING (Asteraceae), *Luvunanga*, 9
Lagenaria abyssinica (HOOK) JEFFRY (Cucurbitaceae), *Murhandagule* 7, 10, 11, 15, 18
Lagenaria siceraria (MOL) STANDLEY (Cucurbitaceae), *Murhandagule*, 24, 27
Lantana camara L (Verbenaceae), *Kashuka-nshuha*, 3, 6, 11, 22
Lantana trifolia L (Verbenaceae), *Kahengerehengere*, 5, 6
Leonotis nepetifolia (L) AITON (Lamiaceae), *Mucumucumu*, 30
Leucas deflexa HOOK (Lamiaceae), *Kanyamafundo*, 15, 30
Lobelia mildbraedii ENGL (Lobeliaceae) *Mwirumbu*, *Muhizi*, 12, 15, 8, 20, 30
Loudetia simplex (NEES) HUBB (Poaceae), *Muyange*, *Iyange*, *Mange*, 14
Lycopodium clavatum L (Lycopodiaceae), *Lugwampinga*, 8
Maytenus arbutifolia HOCHST ex RICH (Celastraceae), *Mugenge*, 27
Melanthera scandens (SCHUM & THONN) ROBERTY (Asteraceae), *Cungulwishi*, 13, 20, 24
Microglossa angolensis OLIV & HIERN (Asteraceae), *Kabazibazi*, 12
Momordica foetida SCHUM (Cucurbitaceae), *Muhu*, 27
Momordica pterocarpa RICH (Cucurbitaceae), *Ishinga*, 27
Mukia maderaspatana (L) ROEM (Cucurbitaceae), *Murhalagala*, 11, 12, 15, 18
Musa paradisiaca L (Musaceae), *Nsina*, *Muhanga*, *Mukamarha*, 1, 14, 30
Myrica kandtiana ENGL (Oxalidaceae), *Cikobarhi*, *Hifukamarhende*, 18
Nephrodium filix-mas, *Bishembegere*, 20
Nicotiana tabacum L (Solanaceae), *Irhabi*, 13, 15, 16, 18
Nymphaea calliantha CONARD (Nymphaeaceae), *Irehe*, 17, 20
Oxalis corniculata L (Oxalidaceae), *Munyumpene*, *Nshimu*, *Mwirule*, 30
Phaseolus vulgaris L (Fabaceae), *Cishimbo*, 18
Phoenix reclinata JACQ (Arecaceae), *Bukindo*, *Mushugushugu*, 14
Phyllanthus capillaris SCHUM & THONN (Euphorbiaceae), *Ngiringi*, *Lunyangumba*, 30
Phytolacca dodecandra L HERIT (Phytolaccaceae), *Cimpokolo*, *Muhokolo*, 11
Piper capense L (Piperaceae), *Kabondobondo*, *Muborobondo*, 8, 15, 18
Piper umbellatum L (Piperaceae), *Kabondebonde*, 30
Plectranthus barbatus ANDREWS (Lamiaceae), *Cicucu*, 12, 15, 18
Portulacca oleracea L (Myrtaceae), *Matako ya bibi*, 30

- Psidium guajava* L (Myrtaceae), *Mapera*, 19, 31
Pteris similis KUHN (Pteridaceae), *Cikanganyambwe*, *Mbalalizi*, 9, 13
Pycnostachys erici-rosenii ROB ex FRIES (Lamiaceae), *Mwizunguluka*, 15, 18, 19, 31
Rhoicissus tridentata (L) WILD & DRUM (Vitaceae), *Mumarha*, 27
Rhynchelytrum repens (WILD) HUBBARD (Poaceae), *Cimvurhaba*, 19, 31
Ricinus communis L (Euphorbiaceae), *Lubonobono*, *Lugaja*, 1, 3, 5, 7
Rumex usambarensis (ENGL) DAMMER (Polygonaceae), *Kafumbalugurhu*, 30
Senecio mannii HOOK (Asteraceae), *Murhagala*, 1, 12, 22
Setaria megaphylla (STEUD) DUR & SCHINZ (Poaceae), *Cinyankulu*, *Cishanyi*, 15
Sida rhombifolia L (Malvaceae), *Mudundu*, *Ncucula*, 19, 31
Solanum nigrum L (Solanaceae), *Mulunda*, 6
Solanum sysymbriifolium L (Solanaceae), *Lurhoborhobo*, 3, 7, 14
Sonchus asper (L) HILL (Asteraceae), *Munyamarha mukazi*, 9
Sorghum bicolor (L) MOENCH (Poaceae), *Ihemba*, 13, 18, 22, 24
Spilanthes mauritiana (RICH ex PERS) DC (Asteraceae), *Cenda*, 5, 12
Sporobolus sp (Asteraceae), *Bwikalabalume*, 5
Tagetes minuta L (Asteraceae), *Maua*, *Lwifuye*, 15, 20, 24
Tephrosia vogelii HOOK (Fabaceae), *Mulukuluku* 4, 20
Tetradenia riparia (HOCHST) N.E. BR. (Lamiaceae), *Mutuzo*, 1, 4, 10, 12, 16, 24
Trema orientalis (L) BLUME (Ulmaceae), *Muhevu*, *Mushakushaku*, *Nyabwifomeke*, 1, 15, 18
Urena lobata L (Malvaceae), *Lukamba*, *Mutembe*, *Muzikanfunzi* 3, 19, 31
Urtica massaica L (Urticaceae), *Lushusha*, 14
Vernonia amygdalina DEL (Asteraceae), *Mubirizi*, 4, 11, 20, 27
Vernonia jugalis OLIV & HIERN (Asteraceae), *Ivumo* 15, 30
Vernonia kirungae FRIES (Asteraceae), *Ivumo*, *kaholohombo*, 1
Vigna vexillata (L) A. RICH (Fabaceae), *Byuku*, 12, 30