

Indigenous animal health practices among Fulani pastoralists in north-western Nigeria

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Abstract

A major draw-back to the development of ethnoveterinary (indigenous animal health) practices in Nigeria is the dearth of information to research scientists and animal health planners on the existing practices which are to be developed. The objective of this study, therefore, was to generate information on ethnoveterinary practices of transhumant Fulani pastoralists in north-western Nigeria. To achieve the objectives of the study, 250 pastoral households at the Zamfara Reserve and some other locations in Sokoto and Zamfara States, were interviewed between 1995 and 1996. The results of the study revealed that the pastoralists applied ethnoveterinary techniques for up to 16 diseases and ailments prevalent in the area. These include foot and mouth disease, black quarter, liverfluke (fascioliasis), rinderpest, CBPP, bloat, snake bites, skin diseases, stuffy nose, liver cirrhosis, diarrhoea, trypanosomiasis, worms, inhibited parturition etc. Majority (about 72 %) of the pastoralists interviewed used one form of ethnoveterinary practice or another. The ethnoveterinary practices employed ranged from the use of herbs, heated metal objects, offal of diseased animals, urine and faeces of both wild and domesticated animals, to recitation of the Qur'an. In all, about 29 plant species were used by the pastoralists for ethnoveterinary purposes. It was concluded that further research work is needed to verify the claims of the pastoralists and develop ethnoveterinary practices to serve as cheap complement to orthodox veterinary medical practice in Nigeria.

Introduction

Indigenous knowledge refers to knowledge that is unique to a particular culture or society. It is usually time-tested, institutionalised, and forms the basis for decision-making in the face of familiar and unfamiliar problems and challenges (TITILOLA and OLUKOSI, 1993). Notwithstanding its apparent significance, indigenous knowledge is often not only ignored by researchers and development workers, but is seen as primitive, backward and irrational, and should therefore be supplanted with modern knowledge and practices which are assumed to be universally superior.

The failure of most modern development approaches to achieve the desired objectives, however, has stimulated a re-thinking of this negative view of indigenous knowledge and practices, in recent times (see GEFU, this volume). It now seems to have been recognised that what may be required in most cases, is not wholesale replacement of the existing knowledge system but an improvement on them in such a way that the two knowledge systems would complement each other (GEFU, 1996). Perhaps, one of the greatest obstacles to any attempt to develop indigenous knowledge and practices is the dearth of information about them. ERINLE (1993) has attributed this dearth of information to the secrecy surrounding most of them, and the fact that they are not written, but passed by word of mouth from one generation to another.

Since it is not possible to improve on something that is not well-known, the first step in developing indigenous knowledge systems should begin with their documentation.

This study is an attempt to document an aspect of indigenous knowledge which deals with animal health and is often referred to as ethnoveterinary practices or simply indigenous animal health practices. The study focuses on Fulani pastoralists who control most of the livestock in Nigeria. This type of study is particularly necessary at this point in time when modern veterinary services in Nigeria has virtually collapsed due to inadequate funding (KIELA, 1995; GEFU, 1993; BABA, 1994, 1995). GEFU (1993) has argued that where modern veterinary therapy is not readily available, the utilisation of ethnoveterinary knowledge and techniques would go a long way in complementing modern veterinary therapy.

Methodology

North-western Nigeria as used in this study refers to the old Sokoto State (prior to the state creation exercise of 1991) which now comprises Kebbi, Sokoto and Zamfara States although the actual data collection was made in the last two. It is located between latitudes 10° and 14°N, and longitudes 3° and 7°E (ABDULLAHI, 1985), and covers an area of 102,535 km² (FOS, 1989). The pattern of rainfall varies markedly across the area; in the south, the average annual total is more than 1000 mm while along the frontier with the Republic of Niger in the north, it is less than 500 mm. The rainy season is from April to September, with most rain in July and August, although the length of the season may vary by up to six weeks (FDLPCS, 1992). The mean monthly temperature ranges between 13 °C in December (through February), and 38 °C in April and May. The relative humidity in the area varies from 10 % in February to 90 % in August (MOCO, 1981).

The vegetation of the area is savanna with the boundary between Northern Guinea Savanna and Sudan Savanna cutting across the centre. The predominant tree species include *Acacia* sp., the desert date (*Balanites* spp.), *Isoberrinia doka* and the toothbrush tree (*Sidastrum persea*). *Panicum*, *Andropogon*, *Hyparrhenia*, and *Brachiaria* spp., are the common grasses (ABDULLAHI, 1985; FDLPCS, 1992).

The area is ethnically diverse, although the Hausa and Fulani people occupy most of its territory and minority groups are confined to relatively small areas. The major occupation of the people is arable and livestock farming. Livestock production is undertaken by both settled and semi-settled farmers, and by pastoralists, but the latter predominate. The major pastoral people are the Fulani who control most of the livestock not only in the area but in Nigeria as a whole.

Data presented in this report were obtained in a larger survey of the entire animal health care system in north-western Nigeria. The aims of the larger survey were to identify prevalent livestock diseases, describe and evaluate the effectiveness of veterinary services, measure the responsiveness of pastoralists to the cost of veterinary services, and determine the economic feasibility of private veterinary practice in the area. The data reported here were collected from 250 transhumant Fulani pastoralists in Sokoto and Zamfara States. The Local Government Areas covered included Wurso, Rabah, Goronyo, Bodinga, and Wamnsako in Sokoto State, as well as Kaara Namoda and Zumi in Zamfara State. In Zamfara State, all samples were drawn from locations in the Zamfara Reserve including Gidan Jaja, Gusami, Tsabre, Kokiya, and Shamashalle. Data were collected through questionnaires and

observation. The sample, which was randomly drawn, was evenly spread among the local government areas. The collected data were analysed by description.

Results and discussion

Prevalent livestock diseases

The diseases and ethnoveterinary practices reported are mostly with respect to cattle. Table 1 presents the distribution of pastoralists according to the most prevalent diseases in their herds during the year of study. It is evident from the Table that foot and mouth disease was the most prevalent followed by rinderpest, anthrax, fascioliasis, black quarter and others.

Table 1: Prevalent livestock diseases in north-western Nigeria

| Disease | No of pastoralists reporting | % of all pastoralists (n = 250) |
|-----------------|------------------------------|---------------------------------|
| Anthrax | 31 | 12.40 |
| Foot and mouth | 101 | 40.40 |
| Rinderpest | 66 | 26.40 |
| Fascioliasis | 19 | 7.60 |
| Black quarter | 15 | 6.00 |
| CBPP | 11 | 4.40 |
| Worms | 3 | 1.20 |
| Fever | 4 | 1.60 |
| Diarrhoea | 3 | 1.20 |
| Lameness | 5 | 2.00 |
| Liver cirrhosis | 10 | 4.00 |
| Blot | 10 | 4.00 |
| Skin diseases | 3 | 1.20 |

Source: Field survey, 1995/96

The widespread prevalence of foot and mouth disease could be attributed to the fact that vaccine for the disease was not available in the area. In the whole of north-western Nigeria, vaccination is conducted annually mainly by the state governments veterinary services with some assistance from local governments. Such vaccination campaigns are restricted only to rinderpest and contagious bovine pleuro-pneumonia (CBPP). Although the Zamfara Environmental Protection Agency also does some vaccination in the Zamfara Reserve, its coverage is limited and most herders still depend on the state services.

Ethnoveterinary practices against prevalent diseases

Majority (about 72 %) of all the respondents indicated having knowledge of ethnoveterinary practices against one or more diseases. There were ethnoveterinary practices against virtually all the major diseases reported. It must be cautioned that the practices presented are as reported by the respondents. They have not yet been verified scientifically. There may also be concern about how herders were able to diagnose the diseases. Studies in Africa, however, suggest that herdsmen being in long close contact with their animals, are quite good in diagnosing livestock

diseases (BIZIMANA, 1994; GEFU, 1996). According to GEFU (1996), herdsmen are able to observe clinical signs in sick animals and then follow them up to slaughter house where they are able to observe the pathologic changes in the organs of such animals. As a result, he maintained, the herdsmen know which organ is affected when certain signs are noticed and they even name some diseases after the affected organ or part of the body. More details about the treatments outlined in this section are presented in Appendix I.

1. Foot and mouth disease

The disease is known as *chabo* or *boro* by the Fulani. The sign of the disease, according to the herders, include watery ulcers or sores in the mouth and on the feet. They also believe that the disease is infectious and try to isolate sick animals. Some of the plants used in treating the disease include *Acacia albida*, *Parkia biglobosa* and *Combretum glutinosum*. Herders also use left-over food and Sura-ul-Yasin from the Qur'an to treat the disease.

2. Rinderpest

Rinderpest is known as *bushiya* in the study area. Herders believe that the tongue of an affected animal becomes frozen (cannot move) and boils appear on it. A hot metal, such as knife, and sometimes stone is used to crush the boils on the tongue of affected animal and cattle urine and faeces are rubbed on the area. Sometimes the hot object is applied to the neck.

3. Black quarter (Black leg)

Black quarter is known to the Fulani as *ciwon iska* or *ciwon daji*. They identified the signs of the disease as swelling of the neck, back quarters and body flanks of the animal. The animal loses weight fast and its hairs stand on end. Some of the plants used in treating the disease include *Acacia sieberiana*, *Diospyros mespiliformis*, *Lannea* sp., *Striga hermannlickei* and *Boswellia dalzielii*. Sometimes, there is cauterisation of the swollen parts (that is, hot objects are applied).

4. Bloat and stomach ache

Bloat is known as *kumburin ciki* while stomach ache is *ciwon ciki*. The plants used in treating both diseases include *Khaya senegalensis*, *Gmelina senegalensis*, *Acacia nilotica*, *Boswellia dalzielii* and *Bombax costatum*.

5. Liver cirrhosis

This disease is known as *ciwon hanta*. Some of the plants used in treating the disease include *Anogeissus leiocarpus*, *Cochlospermum* sp., *Boswellia dalzielii*, *Khaya senegalensis*, *Parkia biglobosa*, *Mitragyna inermis*, *Detarium microrhizon*, *Balanites aegyptiaca*, *Bombax costatum*, *Stereospermum kunthianum*, *Cordia papayana*, *Mitragyna inermis*, *Momordica* sp., *Cola nitida* and *Tamarindus indica* (see ECKERT et al., this volume).

6. Worms

The Fulani refer to worms as *stutsan ciki*. Affected animals eat a lot but do not gain weight. Some of the plant species used for deworming are *Khaya senegalensis* and *Acacia nilotica*. GEFU (1996) also reported the use of *Khaya senegalensis* for worm control in northern Nigeria.

7. Fascioliasis

This is referred to as *tseteku* by the Fulani pastoralists who felt that fascioliasis attacked the liver, the stomach and/or the intestine. According to them, cattle contract the disease during grazing, particularly in the *fadama*. They maintained that the larvae could be seen in the fences

of an affected animal and the faeces becomes watery. *Khaya senegalensis* is used in treating the disease.

8. Diarrhoea

This disease is known as *zawa*. Some of the plants used in treating the disease include *Adonumia digitata*, *Sclerocarya birrea*, *Gmelina senegalensis*, *Khaya senegalensis* and *Striga hermannlickei*.

9. Trypanosomiasis

This is called *sammore* by the pastoralists. Plants used to treat the disease include *Hypophene thebaica*, *Calotropis procera* and *Isberlinia doka*.

10. Dermatophilosis (Garje)

This skin disease is known as *garje*. Engine oil and/or *Ziziphus spinachristi* are used in treating the disease. GEFU (1996) also reported the use of engine oil in treating the disease.

11. Fever

According to the respondents, an affected animal becomes inactive and tends to contract its body while its hairs stand on end. Some of the plant species used in treating fever include *Ficus platyphylla*, *Mitragyna inermis*, and *Haematanthopsis barteri*.

12. Anthrax

Anthrax is known to the Fulani as *saifa* and is treated with *Balanites aegyptiaca*. They believe that blood accumulates in the spleen causing some swelling on the chest or shoulder of the affected animal.

13. Others

Inhibited parturition and snake bite are treated with *Cordia papayana*. *Balanites aegyptiaca* is also used in treating snake bite.

The respondents believe that lameness, which they called *konncji*, hold the knees and ankles of the animal thereby preventing it from standing or moving. According to them, the disease is more prevalent during cold periods. Ethnoveterinary treatment consisted mainly of cauterisation.

Contagious Bovine Pleuro-pneumonia (CBPP) is known as *ciwon huhu* because it is believed to affect the lungs (which is called *huhu*). Treatment consisted of vaccination with the lungs of an animal that died of the disease.

Concluding remarks

The results of the study indicate that a number of ethnoveterinary practices exist for addressing many animal health problems among the pastoral Fulani of north-western Nigeria. The mechanisms of therapy range from the use of medicinal forages, application of hot metal objects (cauterisation), to the use of the Qur'an. The plant types and other materials used come from the immediate environment of the pastoralists. This suggests that ethnoveterinary practices are likely to vary considerably even among the same ethnic group residing in different environments. This points to the need to conduct this type of study in different locations to get a comprehensive picture of the ethnoveterinary practices of the Fulani pastoralists in Nigeria.

In addition, the results presented should be seen only as the claims of the pastoralists and they have to be scientifically verified to determine which of them are genuine. Furthermore, in an

attempt to develop these traditional practices, the question of dosages, in addition to others, also has to be addressed.

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Appendix 1: Details on disease treatment

1. Foot and mouth disease

- I. Dried leaves of *Acacia albida* (Gawo) are pounded into powder, mixed with kerosene and applied to the affected parts. Sometimes, the fresh leaves are boiled and the suspension applied to the affected part without kerosene.
- II. Seeds of *Parkia biglobosa* (Dorowa) are boiled and the suspension used to wash the mouth and feet daily for one week.
- III. The leaves of *Combretum glutinosum* (Taramiya) are placed on fire together with hair of

a mammal giving smoke out to the animals.

- IV. Food left over night is rubbed on the affected parts. Some times, cattle urine is used in the same way.
- V. *Surat-ul-Yasin* from the Holy Qur'an is written 1,600 times on a slate and washed into the drinking source.

2. Rinderpest

A hot metal, such as knife, and sometimes stone is used to crush the boils on the tongue of affected animal and cattle urine and faeces are rubbed on the area.

3. Black quarter (Black leg)

- I. Dried leaves of *Acacia sieberiana* (Shama) are pounded into powder which is put into drinking water.
- II. *Diospyros mespiliformis* (Kaiwa) is put on fire and the animals are made to "smoke" it. Sometimes the fresh leaves are boiled and the suspension given to sick animal to drink.
- III. The bark of *Lamium* sp. (Faru) is boiled and the suspension given to the sick animal to drink.
- IV. The dry shoot of *Striga hermontheca* (Gaugal) is put on fire for the animal to "smoke".
- V. The bark of *Boswellia dalzielii* (Hano) is put on fire and the animal put in the smoke.

4. Bloat and stomach ache

- I. The bark of *Khaya senegalensis* (Madaci) is soaked in water and the suspension given to sick animal to drink. This is also used for curing stomach ache in humans.
- II. The leaves or bark of *Gutiera senegalensis* (Sabara) are boiled and the animal made to drink the suspension. This is also believed to be anti-hypertensive in humans.
- III. The leaves of *Acacia nilotica* (Bagarawa) and the bark of *Khaya senegalensis* are boiled and given to the animal to drink.
- IV. The barks of *Boswellia dalzielii* (Hano) and *Khaya senegalensis* are boiled together and given to the animal to drink. Sometimes, the leaves of *Bombax costatum* (Kuriya) are boiled together with these.

5. Liver cirrhosis

- I. The bark of *Anogeissus leiocarpa* (Faru doya) together with the root of *Cochlospermum* sp. (Faru balge) are boiled and the animal made to drink the suspension. Each could be used separately for the same purpose.
- II. The barks of *Boswellia dalzielii* and *Khaya senegalensis* are soaked and the suspension given to the animal.
- III. The outside of the pod of *Parkia biglobosa* added to the leaves of *Mitragyna inermis* (Giyaya) are boiled together and the animal drenched with the suspension.
- IV. The bark of *Detarium microcarpum* (Taura) is boiled and the animal drenched.
- V. The leaves of *Balanites aegyptiaca* (Aduwa) are pound fresh and the sap drenched.
- VI. The bark of *Bombax costatum* is boiled together with the leaves of *Stereospermum kamuhianum* (Sansanmi) and *Carica papaya* (Gwanda) fruits. Cattle milk fat is added and the animal drenched with the suspension.
- VII. The leaves of *Mitragyna inermis* are boiled and milk fat added and the animal drenched.

VIII. The leaves of *Memorifera* sp. (**Garafumi**) together with the fruits of *Cola nitida* (**Goro**) are soaked in cold water and drenched to the animal.

IX. The fruits of *Tamarindus indica* (**Tsamiya**) are soaked in water which is then given to the animal to drink.

6. Worms

I. The leaves or bark of *Khaya senegalensis* are boiled with potash (**kanwa**) and given to the animals.

II. The roots of *Acacia nilotica* are boiled and the animal drenched with the suspension.

7. Fascioliasis

I. The bark of *Khaya senegalensis* is pounded and potash added to the powder and given with water to the animal.

8. Diarrhoea

I. The leaves of *Adansonia digitata* (**Kaka**) are fed to the sick animal.

II. Leaves and roots of *Sclerocarya birrea* (**Loda**) are boiled together and the animal drenched with the suspension.

III. The leaves and bark of *Guleira senegalensis* are soaked in water or boiled and the animal drenched. Sometimes potash is mixed with the suspension.

IV. The bark of *Khaya senegalensis* is boiled and the animal drenched.

V. The fresh shoot of *Striga hermonthica* is pounded, water added and animals made to drink the sap. It is sometimes also pounded when dry and put in water for the animal. This latter procedure is also adopted against diarrhoea in human beings except that the powder is mixed with local yoghurt (cow milk left overnight) or corn porridge instead of ordinary water.

9. Trypanosomiasis

I. *Hyphaene thebaica* (**Goriba**) leaves (fresh) are pounded and the sap given to animal.

II. The leaves of *Calotropis procera* (**Tanfafiya**) are fed to the animal.

III. The bark of *Isobertinia doka* (**Doka**) is boiled and animal drenched with the suspension.

10. Dermatophilosis (Kirchi)

Dried leaves of *Zizyphus spinachristi* (**Kurna**) are pounded and the powder mixed with engine oil and rubbed over the entire body of the animal.

11. Fever

I. The seeds of *Ficus platyphylla* (**Gamji**) are put on fire together with goat hair and the animal put in the smoke.

II. The bark of *Mitragyna inermis* is boiled with potash and drenched to the animal. In humans suffering from fever or cold, the bark is boiled, and the patient covers his body and traps the vapour.

III. The bark of *Haematosiphis hartei* (**Tsada**) is pounded, mixed with salt and drenched with water.

12. Inhibited parturition

Fresh leaves of *Carica papaya* are given to animal to chew.

13. Snake bite

The bark of *Balanites aegyptiaca* and the roots of *Carica papaya* are boiled and the suspension given to the animal.

14. Anthrax

The bark of *Balanites aegyptiaca* are boiled and the suspension given to animal.

15. Lameness

Hot metal object is applied to the legs of the animal to burn the skin but not puncture it.

16. Contagious bovine pleuro-pneumonia (CBPP)

The lungs of an animal that died of the disease is rubbed on the muscle of the face of a healthy animal. The face swells up and hot knife is used to puncture it. This is a preventive measure.

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Appendix 1: The astronomically based seasonal calendar used by local opinion leaders and farmers in northern Nigeria

| Season | Constellations | Period | Number of days |
|--------------------------|----------------|---------------|----------------|
| DAMINA (Rainy season) | Haka'a | 27/5 - 8/6 | 13 |
| | Hara'a | 9/6 - 21/6 | 13 |
| | Zan'a | 22/6 - 4/7 | 13 |
| | Nasara | 5/7 - 17/7 | 13 |
| | Darfa | 18/7 - 30/7 | 13 |
| | Jabha | 31/7 - 13/8 | 14 |
| KAKA (Early dry season) | Harsan | 14/8 - 26/8 | 13 |
| | Sarfa | 27/8 - 8/9 | 13 |
| | Iwa | 9/9 - 21/9 | 13 |
| | Shimaku | 22/9 - 4/10 | 13 |
| | Gufuru | 5/10 - 17/10 | 13 |
| | Zabhan | 18/10 - 30/10 | 13 |
| DARI (Mid-dry season) | Ikililu | 31/10 - 12/11 | 13 |
| | Kalba | 13/11 - 25/11 | 13 |
| | Shaula | 26/11 - 8/12 | 13 |
| | Nu'aima | 9/12 - 21/12 | 13 |
| | Bulda | 22/12 - 3/1 | 13 |
| | Sa'adu Zabiha | 4/1 - 16/1 | 13 |
| BAZARA (Late dry season) | Sa'adu Bul'u | 17/1 - 29/1 | 13 |
| | Sa'adu Sa'uda | 30/1 - 11/2 | 13 |
| | Sa'adu Ubbiya | 12/2 - 24/2 | 13 |
| | Far'u Mukaddam | 25/2 - 9/3 | 13 |
| | Far'u Muwahhar | 10/3 - 22/3 | 13 |
| | Badamu | 23/3 - 4/4 | 13 |
| | Nudha | 5/4 - 17/4 | 13 |
| | Budaina | 18/4 - 30/4 | 13 |
| | Suraiya | 1/5 - 13/5 | 13 |
| | Dabaran | 14/5 - 26/5 | 13 |
| Total Number of Days | | | 365 |

MOHAMMED et al. (1995), SA'IDU (1978), HISKETT (1978)

Fadama crop residue production and utilisation in north-western Nigeria

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Abstract

The study examined residue use in crop residue production in the *fadama*, nature and quantities of residues produced, grain:residue ratio, extent of and constraints to crop residue utilisation for livestock feed, as well as crop residue marketing system. To achieve the study objectives, data were collected from 54 *fadama* farmers and 11 pastoralists in the Zamfara Reserve and three other locations in Sokoto and Zamfara States.

Data analysis revealed low utilisation of improved inputs, on the one hand, and high level of utilisation of manual labour on the other. Crops cultivated include rice, sorghum, cowpea, sweet potato, millet, pepper, tomato, onion, egg plant and garlic. However, only the residue from the first five were utilised for livestock feed in the area. All the pastoralists and farmers owning livestock utilised one form of *fadama* crop residue or another. Residue utilisation for feed reaches its peak during the dry season. The use of residue for building, thatching, fencing, and as cooking fuel constitute the major threat to crop residue availability for livestock feed. Another problem of residue use identified is rejection by livestock due to quality deterioration after storage, particularly if the residue is stored up to the time of the commencement of the next rainy season.

The weight of residue (straw) obtained from one hectare of rice appears to be lower than the weight of grains. The reverse is the case for sorghum, cowpea and millet. The weight of sweet potato tubers exceeds that of the shoot harvested.

Constraints to marketing identified include poor storage facilities, bulkiness of residue relative to its value, over-dependence on animal transport which restricts distance that could be covered within a given period of time, and absence of standard measures (most of the residue are measured in bundles which are highly variable). The quantities of *fadama* residues produced seem to have increased over the last few years, but so also have the prices.

Introduction

Background on *fadama* farming

North-western Nigeria, comprising Kebbi, Sokoto and Zamfara States, is an important livestock producing area in Nigeria harbouring an estimated 1.77 million cattle, 2.47 million goats, 2.57 million sheep, 247,989 donkeys, 24,685 horses and 43,960 camels (FDLPCS, 1992). Livestock production in the area, like elsewhere in Nigeria (and most of West Africa), is controlled by pastoralists most of whom are either transhumant or completely nomadic. A significant feature of the pastoral production pattern is low productivity which is attributable to inadequate feed availability, among other constraints. The animals are usually grazed in the open natural range in migratory herds. This system, at best, leaves the animals at the mercy and uncertainty of nature in terms of feed supply. The problem of feed availability is