Ethnoveterinary Medicine in Ormaland - Kenya

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Dissertation submitted in partial fulfillment
of the requirement of the Master of Science Degree in
Tropical Animal Production and Health.

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1999

ABSTRACT

Availability of veterinary services is a major constraint in the arid areas of Kenya. The government resources to run veterinary practices do not meet the rising costs of within the veterinary sector. An increasing number of pastoralists are turning to ethnoveterinary medicine. Several ethnoveterinary studies have been conducted in other pastoral areas of Kenya but not in Ormaland. The objective of this study is to assess the adequacy of the government veterinary services and elicit ethnoveterinary information among the Orma herders.

A survey was conducted among 7 veterinary staff and 48 pastoralists to ascertain the efficiency of government veterinary services and the potential of ethnoveterinary medicine in Ormaland. The findings reveal that veterinary services cannot reach most of the pastoralists who have their own confidently treated ethnoremedies for eye infection, CBPP vaccine, Blackquarter, fractures and reproductive problems like dystocia and uterine prolapse. Surgical problems, blackquarter, dystocia and fractures are the most commonly treated diseases by traditional healers. Substances used for ethnoveterinary treatments include, *Mormodica spinosa* (middanqajibu), *Premna resinosa* (kate), *Cadaba farinosa* (kalkacha hare), *Maerua subcordata* (kukube tari), *Cordia sinensis* (mader), traditional butter (hadano), tobacco pastes and fish wastes.

The study concludes that there is an inadequate veterinary service in ormaland, the veterinary staff cannot reach most of the pastoralists. In turn the stock raisers rarely get the services they are supposed to have. The herders have some confidently used ethnoremedies. There is a need to improve veterinary services by integrating modern medicine with some of their confidently used EVM subject to validation. There is limited information on EVM in Ormaland and there is a need for further research, especially scientific validation of the confidently used local remedies.

CHAPTER 1 INTRODUCTION

The delivery of veterinary, public health and other basic services in pastoral areas in the tropics is more problematic compared to areas where livestock are kept in intensive or semi-intensive conditions (Schwabe, 1996). Government veterinary services in East Africa have for the last 40-50 years have the mandate to do clinical and preventive veterinary medicine. Such services can function well when sufficiently funded in terms of drug supply, transport and staff incentives. Unfortunately the resources available to run government veterinary services have not been maintained and veterinary departments cannot afford the rising cost within the veterinary sector. This has given rise to under-provision of government veterinary services to livestock raisers. As a result the government trend is to decentralise the delivery of animal health systems through veterinary privatisation. Though this is generally viewed as a success, particularly for intensive farmers, this is not the case in pastoral areas, particularly in Kenya and more especially in Ormaland. This is because of poor drug supply systems, insecurity including banditry and cattle rustling, inadequate understanding of herders' culture, and the high cost of drugs and professional fees.

In addition there is a growing concern of organism resistance to modern veterinary medicines (Soll, 1997). Pastoralists have several misconceptions that contribute to drug resistance. These may include drug adulteration, mixing two or more different drugs, use of expired drugs, effective for one is effective for other diseases and a drug that is good for humans is also used for animals (Fielding, 1998).

This worsening situation has stimulated a renewed interest in ethnoveterinary medicine which McCorkle (1989) defines as holistic comprehension of indigenous systems of animal health, their interpretation through western medicine and the development of effective and appropriate technologies. Ethnoveterinary Medicine (hereafter EVM) has advantages that outweigh Modern Veterinary Medicine (MVM) as it is cheap, easily accessible, easily available and culturally acceptable (Mathias, 1996). Several studies have been conducted to elicit ethnoveterinary medicine in Kenya (Wanyama, 1997; ITDG/IIRR, 1996). Unfortunately none has been undertaken among the Orma pastoralists of coastal Kenya.

There is no information on the effectiveness of government veterinary services nor about the state of EVM in Ormaland. It is the aim of this study therefore, to access the adequacy of government veterinary services and elicit ethnoveterinary information with the following hypotheses:

- Government veterinary services are inadequate and cannot therefore reach most of the stockraisers.
- Livestock owners have knowledge of ethnoveterinary medicine that could be used to solve some of their own animal health problems.

CHAPTER 2 ETHNOVETERINARY MEDICINE

2.1 Definitions

Ethnoveterinary medicine is defined as a holistic comprehension of the indigenous systems of animal health, their interpretation through western medicine and the development of effective and appropriate technologies (McCorkle, 1986).
Mathias and McCorkle (1989) define EVM as dealing with the folk beliefs, knowledge, skills, methods and practices pertaining to the health care of animals.
McCorkle (1996) gives a description of ethnoveterinary medicinal research as the holistic interdisciplinary study of the local knowledge and the socio-cultural structures and environment associated with animal health care and husbandry.

Ethnoveterinary medicine has some synonyms. At times EVM is referred to as veterinary anthropology (Mathias and McCorkle, 1989) or traditional animal health care and practices (Mathias *et al*, 1996).

2.2 History of Ethnoveterinary Medicine

Veterinary medicine as practised today has roots its roots in herbal medicine, as practised in prehistory in China, India and the Middle East (Schillhorn van Veen, 1996). The literature indicates that Arabia was the world centre of veterinary and other medical knowledge in the early Middle Ages. With the spread of Islam some of this knowledge made its way into Africa and was adopted by stockraisers (Schillhorn van Veen, 1996).

Ethnoveterinary medicine was practised as early as 1800 B.C. at the time of King Hamurabi of Babylon who formulated laws on veterinary fees and charged for treating cattle and donkeys (Schillhorn van Veen, 1996). Traditional veterinary practices have been around for a long time and were the only medicine available until nineteenth century (Mathias-Mundy, McCorkle and Schillhorn van Veen, 1996). In fact, all veterinary practises before the coming of the orthodox veterinary medicine can be called "traditional" veterinary knowledge (Mathias, Ragnekar and McCorkle, 1998).

Many traditional medicines have been abandoned following the discovery of the modern chemotherapy (Mathias *et al*, 1996). But for more than a decade now EVM has experienced a revival and several reports have been published. This growing interest in traditional practices had been encouraged by the recognition of some efficacious EVM products (Anjaria, 1988).

EVM often provides cheaper options than comparable western drugs, and the products are locally available and more easily accessible. In the face of these and other factors, there is increasing interest in the field of ethno veterinary research and development.

2.3 Current Interest in Ethnoveterinary Veterinary Medicine.

The recent revival of western interest in EVM has followed the regained interest in alternative medicines. There has been considerable expansion in the use of local knowledge practices in both humans and animals. This is evident in the USA where the number of people visiting traditional healers in 1988 was more than those visiting primary care physicians (Einsenberg, Kessler, Foster, Norlock, Calckanis and Delbanco,

1993). In the light of this, and related developments, orthodox veterinarians are now accepting traditional knowledge. For example, acupuncture for treating diseases in animals is now widely embraced in conventional veterinary medicine in USA (NIH, 1995). In addition, the American Veterinary Medicine Association (AVMA) has fully recognised some of the local veterinary knowledge as acceptable for use by a valid veterinarian (Schillhorn van Veen, 1997).

2.4 Ethnoverterinary Medicine in Africa

Over the centuries Africa stockowners, through their own methods of trial and error have learnt a great deal about animal diseases and their treatments. These therapies are now widely used. In light of this different Ethnoverterinary practices in Africa will be described, and specific example from Kenya will be used. So far several studies on EVM have been conducted in Africa. Ethnoveterinary medicine involves different aspects of traditional animal health techniques and practices. Such aspects include pharmacology and toxicology, vaccination, surgery, management and magico-religious practices and beliefs.

2.5 Ethnoveterinary approaches in disease aetiology and diagnosis

In EVM diseases are diagnosed by palpating looking and smelling (Bizimana, 1994). Some ethno-diagnostic methods are useful and have found their way into orthodox veterinary medicine. A good example is seen with camel healers in Niger who use the scent of an animal's expired air to diagnose most of the diseases (Curason, 1947) as cited in T.W. Schillhorn van Veen, 1996). In other areas of the world, surra (camel trypanosomiasis) is diagnosed by mixing the urine of the sick animal with mud and

assessing the dried mud (Kohler-Rollefson, 1996). This is supported by Bizimana (1994) who also indicated that diagnosis by smelling is useful in the case of trypanosomiasis in camels. In India, a pregnancy diagnosis is done by placing cereal seeds in the urine of animal under test - a positive diagnosis is considered when germination does not take place (Reddy, 1998).

As in ethnoveterinary system globally (McCorkle, 1986), stockraisers classify most diseases according to their prominent clinical signs. Such examples are seen with Samburu herders who call Nairobi Sheep Disease (NSD) *nadomanyita* referring to red intestines due to bloody diarrhoea, which is the principal, clinical sign of the disease (Haffernan, Haffernan and Stem, 1996).

2.6 Ethnoveterinary techniques and practices

2.6.1 Pharmacology and toxicology

The pharmacological aspect of EVM forms an extensive domain in the study of indigenous veterinary knowledge. A large variety of herbs and plants have been identified and documented. For example in one part of India *Leptademia reticulata* has been reported to increase milk production (Anjaria, 1998). *Carica papaya* latex is used for the treatment of swine ascariosis (Satirja *and Colleagues*, 1994; Hammond, Fielding and Bishop, 1997). A study by Akhtar and Ahmad (1992) of *Mallotus phillippensis* against natural intestinal cestodes infection has been shown to have the same efficacy as that of Nilzan®. Jantana an anthelmintic preparation containing *Artemesia maritama, Brassica nigra, Cessia anceolata, Vernonia anthelmintica, Cuprium sulphas* and *Embelia ribes* was found to be effective against *Haemonchus spp. Trichostrongylus,*

Strongylus spp and Nematodirus spp. Sharma, (1993). Niezen *et al*, (1995) found that lambs grazing *Hedysarum coronarium*, which contained condensed tannins, had significantly lower faecal egg counts of trichostrongylus spp. ($p< 0.05$). Another interesting ethnoveterinary finding is the use of sheep bile by Scottish farmers to treat intestinal worms in dogs (Fielding, pers. comm., 1999). Chavunduka, (1976) listed 53 plants that are used in traditional veterinary practices in Africa,, while Bizimana, (1994) gave a number of plants that have anthelmintic properties.This author further suggested the decoctions made from the mixture of bark of *Anogeisus leiocarpus* with the leaves and stems of *Securinegar virosa*, bark of *Khaya senegalensis* and the roots of *Nauclea latifolia* can be the most effective dewormer.

In Africa, stockraisers, have a wide indigenous knowledge of helminthology. A good example is that of Fulani in the north western province of Cameroon who use leaves of *Annona senegalensis* trhe bark of *Harugana madagascariensis* or the leaves of *Vermonia amygdalina* (Ndi, 1990). In Burundi, leaves of both *Aspilia ciliata* and *Crassocephalum vitellinum* are mixed and the decoction is given through the mouth for the treatment of liverflukes (Baerts, Lehman and Ntore, 1991) while in Niger a decoction of bark of *Khaya senegalensis* is used (Puffet, 1985). Plant anthelmintics used in Tanzania include bark of *Albizia anthelmintica*, *Emelia schimperi* and the roots of *Solanum incanum* (Minja, 1989). Bunyarwanda (one of the Rwandese tribes, some also live in Tanzania) drench infected calves with half glass of an extract from crushed leaves of *Ficus wakefieldii* (Bizimana, 1994) as a broad spectrum anthelmintic.

The Bedouins use urine as disinfectant (Abu-Rabia, 1983) and species of Aloe and Cassia are widely used in Nepal for treatments of various livestock diseases such as wounds (FAO, 1984).

In Latin America, sheep with hepatic distomiasis have been successfully treated with *Aspidium fuliz-mas* (Cãcere Vega, 1989) and *Minthostachys andina* (muna) is used against ectoparasites (Roersch and Hoogte, 1988); and has antibacterial effect against *Escherichia coli* and *Staphilococcus aureus* (Ramirez, 1988) In Trinidad and Tobago, Lans and Brown (1998) reveal that *Azadirachta indica* is widely used to treat heliminths in ruminants and that garlic (*Allium sativum*) reduces the severity of a respiratory reaction in poultry when given immediately after vaccination against Newcastle disease.

In Africa, several ethnoveterinary studies have been conducted and herbs and plants of veterinary importance identified and documented. For instance in Nigeria, experiments on six plants used by Fulani herders gave promising results against trichostrongyles in rats (Ibrahim *et al.,* 1984). Pastoral herders in Cameroon recognised that 33 out 50 cattle diseases can be treated or prevented by traditional methods (Nuwanyakpa *et al.*, 1995).

Nuwanyakpa *et al*., (1990) and Marcus (1992) also tested the efficacy of the anthelmintic in different medicinal plants. The thorns, buds and leaves of *Balanitis aegyptiaca* are used in livestock as anti-snake poison (Ba, 1982). In Tanzania small holder dairy farmers effectively inject the milk of unripe coconut subcutaneously as fluid and electrolyte replacement therapy for young stock suffering from scours Roepke, (1996). This can be related to humans when given as a drip to treat dehydration

from acute diarrhoea. The Waswahili of Tanzania have been found to effectively use the oil from *chelamogra* tree (*Hydnocarpus wightiana* - Blume) to treat dermatophilosis and other skin diseases in their livestock (Roepke, 1996).

In Kenya, pastoralists have wide indigenous veterinary knowledge (ITDG/IIRR, 1996). For example, for opthalmic treatment, Brightwell, Kamanga and Drunsfield (1998) reported the use of honey or sugar for the eye infection (*entoroto oo nkonyek*) among the Maasai. The Samburu use 'Sarai' (*Balanites rotundufolia*) (Wanyama, 1997) or the liquid from the boiled roots of 'Ikimantus' (*Plumbago zylanica*) (Brightwell *et al*., 1998). For opthalmic problems Bizimana, (1994) claims that Iteso of Uganda use a few drops of *Nicotiana tabacum* powder soaked in water.

Sixty seven plants of medical value have been recorded and categorised according to their human, nutritional, medical, veterinary and domestic uses in Kenya (Morgan, 1981).

In one part of eastern Kenya, a survey reveals that the local and traditional healers hold a tremendous amount of traditional veterinary knowledge (Njeru, 1994). Omondi (1996) noted ethnoveterinary practices among the Kalenjin ethnic group in the rift valley province. A comprehensive report on Kenya's traditional veterinary and animal management practices is available (ITDG and IIRR, 1996). Wanyama (1996) has documented 10 confidently treated diseases using EVM practices among the Samburu pastoralists of Kenya. These are: Retained placenta, (*Nkuboto e mudong'*), Fleas and lice infestation (*Loisus and Lashei*), Rejection of Calf (*Nkibita e lashe*), Infestation by leeches (*Lmologi*), Streptothricosis (*Lmongoi*), Fracture (*Moyan e*

nkonyek), Dystocia (*Nkitaruonoto e lashe*), Bloat (*Mbereri*) and Wounds (*Ngoldonyot/ Ibae*). Blood letting (sometimes referred to as venipuncture) is a common technique among the Kenyan pastoralists including the Turkanas (Ohta, 1984) and the Maasai (Schwabe, 1978).

2.6.2 Immunisation

History records suggest that the Chinese developed the first crude vaccine by using technique known as variolation - which means inoculating a small piece of infected material from a mild case - in human vaccination against small pox. This indigenous knowledge spread in Europe by the 1700s (Hopkins, 1983).

Many traditional farmers have their own folk knowledge of immunology. For example, Russian Cossacks, Arabs and Indian camel keepers effectively inoculate their camels against pox variola using variolation. The Indians use scabs from an infected animal and suspended in milk. A needle is then dipped in this vaccination solution and inoculated into the young camel in the lips. The Arabs use thorns from acacia plants for inoculation (Curasson, 1947, as cited by Mathias-Mundy and McCorkle, 1995).

In Africa, many pastoral societies have a wide knowledge of immunology. For example, the North African Fulani (Ba, 1982, Wolfgang, 1983), and the Maasai (Schwabe, 1978) use similar immunisation techniques for vaccinating against Contagious Bovine Pleuropneumonia (CBPP) by inserting a piece of infected lung into the nostril of a healthy animal. The Samburu stockraisers make a powder by burning infected lung and inserting the powder under the cut skin in the ear (ITDG / IIRR, 1996).

The Somali pastoralists immunise their animals against rinderpest by employing a solution of urine, milk and faeces obtained from animal with mild cases of rinderpest while Fulani infuse a piece of infected lung in the muzzle of immunising against rinderpest (Mathias and McCorkle, 1989).

Kavirondo herders have been reported to vaccinate against blackleg by sprinkling the blood of an animal that has succumbed to the disease over other susceptible cattle (Wagner, 1970). However, Minja (unpublished), reports that the Maasai in Simanjiro, Tanzania have a different approach. They boil the meat from the animal that died of the disease and the 'soup' is orally given to the healthy animals.

2.6.3 Wounds and Surgery

Livestock owners have developed different method s of wound care. Plants and other substances are used as wound dressings. For instance in Sri Lanka, wounds are dressed with crushed fresh turmeric cooked in oil of *Azadiracter indica* leaves.

The Sudanese Dinkas dress fresh wounds with sterile cattle, ash and cow urine (Schwabe and Kuojok, 1981). The Maasai healers cleanse their livestock wounds with hot water and suture with thorns held in place by tendons. They also cuterise chronic wounds, remove injured eyes and suture intestinal and stomach wounds (Schwabe, 1978). With the Turkana of northern Kenya, the wounds are dressed using the leaves *Caralluma somalica* (Morgan, 1981).

Cauterisation and blood letting are common techniques worldwide but more so among African pastoralists. The following publications all mention cauterisation Ba, (1982); Maliki, (1981); Ohta, (1984) and Schwabe, (1978). Cauterisation is used in different ways by stock owners. It can be applied to stop bleeding, heal chronic wounds, treat hoof problems, and prevent horn development in claves and to treat other ailments such as anthrax, trypanosomiasis, scabies, muscle pains and lizard bites (McCorkle, 1986). It is reasonable to believe that not all these cauterisation methods are of unquestionable induce heat or to treat urinary blockages (Marucchi, 1950) as cited by Matthias-Mundy and McCorkle, 1989).

As for bloodletting, some descriptions are found in Wagner, (1970) and Schwabe (1978), Many African pastoralists for treatment purposes use bloodletting, the ethnic groups of Maasai and Kikuyu perform bleeding by shooting an arrow into the jugular vein (Schwabe, 1978; Wagner, 1970).

Castration is a widespread surgical practice in most parts of the world, Methods include open surgery using a knife; biting the seminal duct without damaging the scrotum as practised by American and Australian shepherds, cutting the scrotum with a spear, then drawing the testicles and severing it from the body as used by the Nuer (Pritchard, 1937as cited by Matthias-Mundy and McCorkle, 1989). The Dinka of Sudan slices the skin and tunica then severs the spermatic cord by scraping it with the edge of a knife (Schwabe and Muojok, 1981). In Ethiopia, the Madosha (Means hammer in Amharik) is used for castration. This involves crushing the spermatic cord by laying it over a stick

and striking the cord with the Madosha (Ghirotti and Mulatu, 1996). In Kenya traditional methods of castration and classification of parturition among the Turkanas are well-documented (Ohta and Itaru, 1987), These authors reported 3 different methods of castration for their livestock: beating, cutting and biting (Ohta and Itaru, 1987). Other techniques in ethno surgery include rumen trochanisation in case of bloat. This is described in the literatures by Ba, (1982) and Schwabe and Kuojok, (1981).

2.6.4 Management Practices

Arthropod-borne diseases are a major threat to all stockraisers in the tropics. This has led to the development of different methods by African stock raisers for the control of insects and parasites of veterinary importance. A number of techniques developed include fumigation and smudge fires as commonly practised in various parts of the world. This is seen in Brunei, (Kimball, 1985); Nigeria, (Ibrahim *et al,* 1983) and Sierra Leone (Bah, 1983). Hussein (1984) claimed that seasonal movements among the nomadic pastoralists are often guided by the need to avoid the disease bearing livestock pests.

Movement of animals through time and space so as to avoid pests and disease is an alternative and commonly used practice in continental Africa (Schillhorn van Veen, 1996). Such movement leads to normadisms or transhumant patterns in which herds spent certain seasons at particular places, but move about at other times of the year searching for water and pasture. A good example is given by Shillhorn van Veen, (1996) among the west African herders who move their stock to the north during the rainy season to avoid the risk of tick and fly -borne diseases while in dry season the

animals are taken to the south in search of pasture. Manual removal of ticks, avoidance of pest in infested areas and use of homemade fly repellants are also employed to deal with external parasites (Ibrahim, 1986).It is further indicated that herders are well aware of the risk of exposure to tsetse flies and that other disease vectors are also higher in the wet season (Ford, 1971).

Other traditional management practices involve breeding, range and forage management, nutritional supplementation and calf rearing. Stockowners generally have a working knowledge of these animal husbandry practices. An example of this is the pastoralists knowledge of folk genetics (Fukui, 1988) such as that of crossing with local herds in building up disease resistance. Another example is that of crossing with N'dama for trypanotolerance. This is seen among the Fulani of Burkina Faso (Wolfgang, 1983) and WoDaabe of Niger (Maliki, 1981). Apart from breeding, the Fulani use their traditional Knowledge of reproduction to control lambing and kidding in small ruminants, by tying off the penises of rams (Ba, 1982).

2.6.5 Magico-Religious Practices.

Ethnomedical systems for both humans and animal are usually related to magic religion and cosmology (McCorkle, 1986; Schwabe, 1978). However, orthodox science maintains a strict division between natural and supernatural approaches to health care, even though both coexist in virtually every culture.

In the Northern hemisphere, people also make vows to Saints and offer prayers for patients hospitalised for serious operations. Similar approaches are reported in

veterinary field (Mathias Mundy, 1989). This is evident with catholic farmers in Ireland who sprinkle holy water on cattle bought from Protestants as a precaution against any religious impurity associated with the exchange (Shanklin, 1985).

Magico religious practices form an integral part of Ethnoverterinary practices and are in wide existence. Some people suspend amulets or bouquets over animals or their quarters to protect them from diseases, evils or accidents. Examples of these practices are seen in Brunei (Kimball, 1985); Niger (Maliki, 1981) and Trinidad and Tobago (Lans, 1998).

2.7 Advantages and Limitations of Ethnoveterinary Medicine

Advantage of EVM

- It can be easily administered, Mostly given orally or topically.
- Most EVM products are effective to some extent especially those with anthelmintic properties, for example *Eucalyptus grandis* was found to be effective against *Haemonchus controtus* (Bennet-Jenkins and Bryant, 1996).
- It is cheap and readily available.
- Livestock owners are already familiar with EVM.

Limitations:

- Lack of Scientific validation of most ethnoveterinary therapies.
- Time consuming and inconviniences involved in their preparations and use.
- Only seasonal availability of certain medicinal plants..
- Lack of integration with orthodox practices.
- Intellectual Property Rights (IPR). The indigenous knowledge is the right of the local people. The information collected from the poor resource pastoralists should not only be documented but also feed back the findings to benefit the local people.
- Paucity of treatment against the infectious epidemic diseases such as Rinderpest and Foot and Mouth Diseases.
- Existence of inappropriate practices like cauterising the vulva of the cows, to induce heat or treat urinary blockages, and for the treatment of the infectious diseases.
- Difficulty in standardising herbal therapies as the concentration of active ingredient varies in different parts of the plants.

- EVM is sometimes inappropriate when it comes to treating a large herd.

For example, washing the wounds and applying warm ashes mixed with salt to pastoralist herds of 400 - 2500 animals suffering from Foot and Mouth disease (FMD) is practically difficult.

CHAPTER 3 THE ORMAS

3.1 Who are the Ormas? - Their Origin and Culture.

The account of the Orma below is derived from publications by Ensminger (1996), Ensminger and Rutten (1991) and Grimes (1996), except where otherwise indicated.

The Ormas are directly related to the large Oromo group of southern Ethiopia and the Arssi, Macha, Borana, Gabbra, and Sakuye of northern Kenya (Kelly, 1990) with the Borana being their closest ethnic and linguistic relatives. The Ormas are referred to as '*Galla*' or '*Wardei*'. The Author of this study has chosen not to use these names as both are derogatory terms. The name *Galla* means pagan, infidel or non Muslim while W*arde*i means 'war captives' and is used to refer to certain group of Ormas that were taken captive and enslaved in Somalia during the Orma-Somali war in the early 19th century.

The Ormas returnees are called *Wardei* and their culture and language are more pof Somalis than Ormas. The *Wardei* insist however that their ethnic identity is Orma and dislike to be referred to as Somali (author's field observation).

Ormaland like many other pastoral areas is less developed than surrounding agricultural areas. There is for instance no piped water, wells are hand dug each season in dry riverbeds and these are the only source of water during most of the year. The Ormas populate most of the Tana River district on the west bank of the Tana River, with heavy concentrations are found in some settlements in Lamu districts to the East of Tana and a few live in Garissa district.

There is conflicting ethnographic information in the literature on the migratory routes taken by Ormas to their present position in Kenya. According to Lewis (1960), the Orma migrated from Ethiopia to Somalia, where they were pushed by Somalis into their present home. However, (Turton, 1975), scholars have speculated that the great Oromo expansion that began in 1537 in south-western Ethiopia was responsible for Oromo migration directly into northern Kenya., and that the Orma came via Moyale, the Lorian Swamp and the Tana River, not via Somalia. This is supported by linguistic analysis and the absence of evidence of an Oromo presence in Somalia before the 17th century (Lewis, 1960).

The available literature is contradictory on the migratory routes taken by the Orma from Ethiopia to their present area in coastal Kenya. However, in all accounts , there is agreement that the Orma came from Ethiopia and by 1624 were already settled in their current home.

Cattle are the essential stock in the pastoral life of the Orma. In the semi-arid areas, distance from the Tana Delta, Orma keep camels in addition to cattle and small ruminants. Despite the possession of camels, donkeys and small stock, cattle are the basis of the Orma's economy.

Milk of the large stock is the important staple food of the Orma while the small stock supply meat. Because of their agricultural ancestry the Orma attach no shame to eating grain, which they obtain by purchasing or through trade with their cultivating neighbours.

The culture of Orma, which is similar of that of Borana in northern Kenya, is a relatively rich one. There is an abundance of well-designed household possessions.
Wood is the commonest material and yields the widest variety of items in an inventory of a typical household.

The palm provides a second common material for one basic item with variety of uses.
Orma women take the leaf of the palm and split it into thin strips. When they have produced a sufficient number of strips they weave them into indispensable, multipurpose mats. The mats are used to cover houses, floor of houses, beds and for saddle-padding camel and donkeys. They may be made more elaborate by weaving strips of coloured cloth among the palm leaf fibres.

Houses are grouped to form settlements, which are temporary and highly mobile.
The size of settlement is determined by families residing in it and by the number of members in each family. Settlements are circular, they are laid out to include small bomas (small enclosures) for the stock kept to supply the daily needs of the people.

3.2 Patoralism among the Orma people.

Normadic pastoralism among the Orma is an ancient practice started at the same time as that of their ethnic relatives, the Oromos of Ethiopia and Borana of northern Kenya. Cattle among the Ormas are regarded as the most important livestock type while sheep and goats come second. Generally, camels are not kept by Ormas but there has been a change since the early 90s and a few Ormas are now found to own Camels especially

those living in hinterland areas such as Waldena, Iddi and Assa, but culturally they do not eat camel's meat. The southern delta (Garsen) has a lot of forage, which can be utilised by camels, but high tsetse challenge discourages their keeping.

The Orma herds are split into two groups. The first group is called the manyatta herd and usually consists of lactating cattle or sheep and goats and sometimes camels that graze around the settlement (about 15 km radius from their settlement manyatta). The other group consists of the dry herd called urene - referring to the herd that is always moving in search of water and pasture. This group is usually larger than the manyatta ones, but the ratio between them varies depending on the family's livestock wealth.

The smaller size of the urene herd, the higher proportion of the herd kept in the manyatta. However, the size of the family is the determinant factor of the manyatta herd as there should be enough milk to supply to all the family.

The use of communal grazing by the manyatta herds could pose problems such as the "tragedy of the commons". But with the Orma case this is different as the variations in livestock wealth are not taken seriously by the Ormas and the general rules enacted by the communities apply to all. The most important rule on the use of grazing resources is that no urene herds are allowed to use manyatta areas. The reason being that the urene herds are larger and if allowed can deplete the grass around the manyatta, forcing the shifting of the settlements. The Ormas desire to keep the grazing areas around the manyattas as long as possible to avoid any movements as these areas are associated with more reliable water sources and generally have schools near them.

The small stock is also split into manyatta and urene sections. In the Tana delta where animals are brought from the hinterland during the dry season in search of pasture and water it has been agreed among the pastoral villages that when the cattle proceed to the Tana delta area the small stock remain around the manyatta. This is done in consideration of the fact that small stock do not like wet areas and normally they move towards the drier areas like Assa (hinterland) during the time of the floods (Ecosystems, 1985). In the hinterland, kraals called "'fora" are erected for small stock. The stock utilises the pastures around these foras until they are exhausted.
They then move to the other areas where other foras are constructed.

The splitting and the management of the two herds have two implications on livestock care. Manyatta livestock receive more attention than the urene ones. It is within the Orma custom that all men inspect their cattle in the morning before proceeding to other duties. De-ticking and treatments are done in the morning. The urene herds do not receive intensive observations and therefore are not treated as well as the manyatta herds.

In fact the "Jarsa" (old men in Orma language) in the manyatta often complain that they are not kept informed about the disease situation in urene livestock. Helmithiasis problems are only dealt with in manyattas herds. However, it appears the urene livestock perform better than their counterparts in manyattas, as the former herd tends to be healthier despite lack of disease attention. The urene mostly use pasture in areas

with less disease pathogens and their rotational mode of grazing enables them to get better feed. On the other hand, the manyatta livestock graze on pasture in depleted areas that have less nutrients and where there is high disease challenge, especially trypanosomiasis, caused by tsetse flies, which seem to be abundant in the delta region.

CHAPTER 4 SURVEY OF ETHNOVETERINARY MEDICINE IN ORMALAND

4.1 Introduction and Objectives

Ormaland is situated in Tana River District of coastal Kenya. The two major ethnic groups which dominate this land are: Orma and Pokomo. As discussed in chapter 3 the Ormas are believed to have migrated from Ethiopia 1400 years ago, and are closely related to Ethiopian Oromos and speak the same language. Ormas are typical pastoralists and they depend solely on livestock. They mainly keep cattle (Orma-zebu) and a few small ruminants.

A great deal of work on the elicitation of ethnoveterinary knowledge has been undertaken in different pastoral areas in Kenya , such as Samburu, Turkana and Maasailand (Morgan, 1981; ITDG and IIRR, 1996 and Wanyama, 1997).

Extensive studies are being conducted in ethnoveterinary medicine by different organisations. These organisation include Intermediate Technology Development Group (ITDG), International Centre of Insect Physiology and Ecology (ICIPE) and International Livestock Research Institute (ILRI). With these extensive EVM studies carried out in Kenya, it is quite surprising to find that even with the Orma's long history of living with animals and as descendants of the large Oromos tribe of southern Ethiopia; no survey of traditional veterinary knowledge has been conducted.

Most of the livestock owners tend to depend on imported drugs, which remain expensive and unreliable in terms of availability from the government veterinary services. This leads to drug adulteration, misuse and often resistance. In the face of this, traditional knowledge in disease treatment and control becomes important. It is timely, not only to document such knowledge for its future protection but also to promote its appropriate application within Ormaland.

The objective of this particular survey is therefore to:

- determine the perception of the herders of the government veterinary services.
- elicit information on ethnoveterinary practices.

4.2 Ormaland of Tana River District- Background Information.

4.2.1 Position and Size

Tana River District is one of the six districts that consititute the Coast Province. The district borders Kitui District to the west, Mwingi to the northwest, Darissa to the east; Tharaka Nithi and Isiolo to the north, Lamu to the southeast, Kilifi and the Indian Ocean to the southeast. The district lies between the equator and 3^0 south and longitudes 38^0 30" east and 40^0 15" east.

The district is divided into 7 administrative divisions with a total area of 38 782 km^2. Garsen is the largest of the seven divisions with a total area of 15 624 km^2 followed by Galole division which contains Hola town that forms the district headquarters (GoK, 1997).

4.2.2 Physical and Environmental Factor

4.2.2.1 Topography and Climate

Tana River District has undulating Plains as its major physical feature. The highest area is Minjila to the south of the district.

The extensive River Tana delta, has great potential for the possible intensification of agricultural developments in the district such as crop production and dry season grazing. There are seasonal rivers, popularly known as 'lagas', in the north eastern part of the district. The beds of these rivers form an important source of water for both livestock

and wildlife. In the dry season they retain water when other areas have been hit by water problems.

Tana River district receives a low bimodal and erratic type of convectional rainfall. The mean annual rainfall ranges between 300mm and 500mm.The long rains occur in April-May while the short rains occur in October and November.

4.2.2.2 Vegetation

Most of the vegetation in the district consists mainly of thorny bush land or wooded grasslands of varying density. Acacia commiphora forms the dominant vegetation. There are five main vegetation types found in Ormaland: the reverine forest, Transitional Zone dry bush land, mangroves and plantations and pockets of African Tropical Rainforest, found in both the reverine and lowland forests. Mangrove forest is a natural forest resource only found in Garsen division as it only thrives in the estuarine areas. The sea water and fresh water from Tana Delta have and interface and the impact form the strong oceanic waves are minimal.

In the northern part of the district where rainfall is low, typical desert plants such as *desperma* and *commiphora* species are common. Salt plants like *salvadora persica* are also evident. There are a few exotic trees in the district of which the most important is *juriflora prosopis*, locally known as "mathenge". The trees have unique xerophitic characteristics that enable them to survive in all parts of the district.

4.3 Demographic Characteristics

Tana River district is one of the least populated districts in Kenya. In 1989 the population was estimated to be 128 385 people (1989 human population census). A report by Gok/UNDP/UNICEF (1998) puts the current district population at 151084. This population is projected to increase to 190 433 by the 2001 (GoK, 1997-2001).

Table2: Human population by division in Tana River District.

DIVISIONS	**POPULATION**	**NUMBER OF HOUSEHOLDS**
GALOLE	38 599	4 714
RARSEN	35 489	5 061
BURA	28 744	3 591
MADOGO	13 069	1 635
KIPINI	13 032	1 742
WENJE	12 064	1 518
BANGALE	9 187	1 148
TOTAL	151 084	19 409

Source: GoK/UNDP/UNICEF Flood Emergency Assessment Report (1998).

Fig. 1 A map of Kenya locating Tana River District

Fig. 2 A map showing the study area of Tana River District.

4.4 Survey method used in gathering the information.

4.4.1 Rapid Rural Appraisal (RRA) and Participatory Rural Appraisal (PRA).

RRA and PRA techniques are widely used in gathering information. RRA is a collection of cost effective ways to learn about research situations needed and initiatives of rural people and to collect relevant data for project planning (Waters-Bayer and Bayer, 1994). Tools used include interviewing, diagramming, ranking and mapping. PRA goes further than RRA in actively involving rural people in identifying their problems, seeking solutions and evaluating results.

PRA and PRA both aim for faster collection of better quality data and speedier analysis than given by conventional questionnaires (Waters-Bayer and Bayer, 1994, Baldwin and Cervinskas, 1993). However, an important part in both techniques is triangulation, which means looking at things from different perspectives. This involves applying different methods using different source of information collected by different people and cross-checked them in order to obtain more accurate results.

Participatory rural appraisal methods were applied during the survey period. These methods were picked to increase the amount of information that could be collected in the 5 weeks survey period in Ormaland as well as to maintain the research as a public collaborative and participatory activity. The data collection method used took into consideration the definition of veterinary anthropology given by Matthias Mundy and McCorkle (1989), which is "folk management of animal health in the context of the whole farming system with consideration for other social economic and political realities."

Qualitative data were gathered on ethnoveterinary medicine using two open ended questionnaires (Appendices 1&2). One was meant for the government veterinarians and animal health assistants and other for pastoralists. Both questionnaires were written in English and translated in Swahili and modified in Arusha among the Maasai in Simanjiro whilst the author was undergoing training in the elicitation of EVM information at the Vetaid EVM project. Nine pastoralists and 2 animal health assistants were interviewed during the testing. Despite the fact that Maasai are culturally different from the Orma, both are pastoralists and share the same approach in terms of animal health and husbandry.

4.4.2 Localities selected

The survey was confined to three divisions of Tana River District. Garsen division, which is in the lower Tana Delta, and Galole and Bura which are in the arid north. The reason for selecting these divisions for this study was due to their high Orma populations and associated large livestock numbers (GoK, 1998).

4.4.3 Selection of villages

A list of Orma villages in the three divisions was obtained from the district Veterinary officer, Hola, and from which representative villages were selected. Random selection of villages was not possible because of banditry risks and logistic problems. The selected villages were Kalkacha, Dayate and Mikinduni in Galole division, Mataa Arba and Bura Sekuele in Bura division, while for Garsen division Kipao, Oda and Assa were used.

In each village community health workers in charge of the area were identified and informed of the interview dates. Chiefs or headmen in each village were approached to give a list of old men.

4.4.4 Method of data collection.

The data were gathered through individual semi-structured interviews with the old men. During the interviews the questionnaires were completed with the assistance of the Orma speaking Community Animal Health Volunteer[1]s (CAHV)[1] who were also used as translators. These CAHV are often referred in the literature as Community Animal Health Workers (CAHW) but the author feels the term is unfair and decided not to use it since they are virtually unpaid.

Throughout the survey the informants were asked to show the medicinal plants or any other ingredients or demonstrate their magico religious practices. Where possible photographs and samples of the plants were taken. Scientific identification of the medicinal plants was done using the available literature and with the assistance of Kenya Forestry Research Institute (KEFRI) in Bura.

4.4.5 Method used for triangulation.

After completing the questionnaires for each division an informal meeting was held with the key informants. The meeting place was either the slaughter house or auction

[1] These are Orma young men who are selected by the village elders and then trained and supplied with veterianry drugs by Catholic Relief services (CRS) in order to deliver animal health services.

yard where the pastoralists felt comfortable . Fridays were agreed to be the meeting days as most of them come to town for prayers.

A workshop organised by CRS (Catholic Relief Services) for training of CAHVs was also used to cross check on the information obtained from the interviewees and seek any other valuable ethnoveterinary remedies.

4.4.6 Data analysis

Simple quantitative methods of data analysis were used. Analysis was manually done using tallies and percentages.