

**World Association for Transport Animal Welfare and Studies (TAWS)
The challenge of improving transport animal welfare in the world:
ways forward**

Workshop held 24 April 2003, Silsoe Research Institute, UK

**Ethno-Veterinary, Complementary and Low Cost Treatment
and Management of Working Animals**

By

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Introduction:

Domestic work animals exist in all regions of the world and they assist in eliminating poverty, reducing drudgery and creating wealth. World-wide, there are an estimated 400 million draught animals being used for agricultural operations (Barwell and Ayre, 1982). Starkey (1988) estimated that, of these, some 18.6 million are employed in sub-Saharan African agriculture. These are predominantly oxen but also include cows, donkeys, mules, horses and camels. Work animals are particularly important for food security in small holder farming systems by assisting directly with crop production (e.g. ploughing, planting and weeding). They also assist through animal-powered transport (on-farm, marketing, riding and pack transport) and carrying water and fuel wood (saving household time and effort of housewives and children). Animal power can also be used for water-lifting, milling, logging and land excavation and road construction. Working animals can be sustainable, affordable and appropriate, requiring little external input especially amongst resource-poor people in developing countries. Whilst animal power requires few external inputs, there can be problems associated with its use. These include amongst other things; disease, nutrition and management. Disease can pose considerable problems for the farmer. Plagues such as rinderpest can decimate cattle populations and it is important that draught animals be protected by vaccination. Gastrointestinal parasitic infections constitute a

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major obstacle to animal production in general and work animals in particular, resulting in high economic losses in the form of impaired performance, significant loss of weight and sometimes death (Fabiyyi, 1986; Gebreab, 1998)). The loss of his animals is often a disaster to the owner, especially if the loss occurs at the beginning of the ploughing and planting season. Therefore, it is important that animal keepers find control and preventive measures that will ensure good health of their animals. This paper will look at low cost treatment and ethnoveterinary (EVM) management of diseases of working animals especially in developing countries.

Disease Management:

In view of the investment that resource-poor farmers make on their working animals and their dependence on them as their source of livelihood especially in the growing season, prevention and control of diseases of these animals would seem justifiable. Diseases with clinical signs that are easily visible are the ones easily noticed by the animal owners. Sub-clinical diseases are more difficult to deal with. They may not kill the animal, but can severely reduce its productivity and longevity. There has been some evidence that the sub-clinical diseases reduce work output and equally that additional stress of work can predispose working animals to diseases (Lefevre and Lhoste, 1993; Hoffmann and Dalgliesh, 1995; Samui and Hugh-Jones, 1990)

Poor animal health is an important factor limiting productivity in most developing countries. In many of these countries, there has been a decline in funding for veterinary services and for animal-health care in general. Also, allopathic drugs and veterinary services are expensive and beyond the reach of the resource-poor animal keepers hence they resort to use of ethnoveterinary medicine (EVM), which are more readily available and cheaper (Guyatt and Evans, 1992; Kudi 1999). Methods employed include management, local medicines and purchased drugs and vaccines.

A. Management Practices:

Traditional animal keepers have a range of management practices that help not only in controlling diseases but also in improving the welfare of their animals. This is much wider than just the use of herbal medicines. It also

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covers bone setting, vaccinations and other infectious diseases, branding and careful management practices. Examples of such practices are:

- Vaccination: Use of tissues from infected animals (rich in infective agents) to vaccinate 'healthy animals' against such diseases
- Physical Removal: Removal of ticks by hand and by the use of thorns and burning them
- Grooming to remove fleas and lice.
- Burning of incense (Certain plants) to remove fleas, lice, some ticks and flies.
- Removal of faeces from grazing area, thereby reducing greatly the parasitic burden.
- Good nutrition

B. Local Medicines:

The use of local herbs and plants, in addition to other practices, is termed 'ethnoveterinary medicine'.

Ethnoveterinary Medicine

EVM is defined as dealing with 'the folk beliefs, knowledge, skills, methods and practices pertaining to the health care of animals' (Mathius-Mundy and McCorkle, 1989). EVM is often taken to mean using medicinal herbs. However, it has more to offer such as; Information, Practices, Tools and Technologies, Beliefs, Breeds and Human Resources.

For the purpose of this particular write-up, it can simply be defined as the medicines and management practices that livestock keepers are using now other than modern synthetic drugs.

About 80 % of people in the world today rely on folk (or traditional) medicine for treating both human and animal diseases (Alcorn, 1995). Traditional veterinary practices are based on indigenous knowledge passed on from generation to generation, as is the case of the traditional human medicine. The use of traditional medicine and medicinal plants in most developing countries, as a normative basis for the maintenance of good animal and human health, has been observed (UNESCO, 1996). Herbal medicines in developing countries have become more popular in the treatment of many livestock diseases, and also on account of the increasing costs of animal

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health maintenance. Indeed, the market and public demand has been so great that there is a great risk that many medicinal plants today, face either extinction or loss of genetic diversity.

Most commonly used sources of drugs amongst resource-poor animal keepers are herbs and plant extracts, seeds, leaves and barks of certain trees, tubers, and roots. Others include wood ash, kaolin, potassium, local soap and spent engine oil. One plant may be indicated for several conditions and sometimes, a condition requires a mixture of several plants. The majority of EVM use ingredients, alone or with a vehicle for administration (Kudi, 1999; Van der Merwe et al., 2001)

Diseases in working animals treated with medicinal plants include diarrhoea, parasites, bloat, blisters, pneumonia, contagious bovine pleuro-pneumonia (CBPP), rinderpest, foot-and-mouth disease (FMD), lameness, skin conditions and trypanosomiasis. Resources for treating these conditions include local plants, minerals and sometimes animals themselves. These have evolved into an art and a science, practised according to the experience, traditions and disease theory of the healer. The diversity of flora is a rich source of herbal medicine and the forms of which, the drugs are include infusions and decoctions (drenches, licks, powder, and lotions). Drugs are given, in most cases 'to effect' to achieve clinical improvement rather than complete elimination of the causative agent (Ibrahim, 1996).

Common Diseases of working animals

a. Cattle/Oxen/buffaloes

- Diarrhoea
- Foot rot
- Parasitic (internal)
- Pneumonia
- Skin conditions
- Ticks/fleas/lice
- Wounds/blisters/injury

b. Donkeys/Mule/Horses

- Lameness
- Lice infestation

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- Wound/Injuries
- Parasite (Internal)
- Mange/Ringworm

c. Camel

- Skin Conditions
- Wounds/Injuries
- Syphilis
- Parasite

Example of EVM practices:

1. Use of honey in wound healing. Honey is applied to wounds as dressings and acts by drawing fluid into the wound thereby clearing dirt and infectious agents. This promotes healing (Porth, 1994; Yila, 2002).
2. Wood-ash rubbed into animals' coats to repel insects potentially carrying disease organisms. Also smoke from certain plants (e.g. *Nicotiana tobaccum*) used to control fleas and ticks (Mathius-Mundy and McCorkle, 1989; Alawa et al., 2002).
3. Spent engine –oil is use for the treatment of many skin conditions e.g. dermatophilosis, mange and other fungal conditions (Kudi, 1989; Mathius-Mundy and McCorkle, 1989;).
4. Extracted oils from the plants *Khaya senegalensis* and *Butyropermum parkii* is use in the treatment of wounds, swellings and external parasites. Also used in the treatment of skin conditions like dermatophilosis and mange (Kudi, 1995).
5. Viscous liquid form boiled castor oil plant (*Ricinus communis*) is used for the treatment of mange and ectoparasites (Peacock, 1996).
6. Many plants are being used in the control of helminthosis in working animals. The extract of the plants, either from boiled or soaked leaf or bark) are given orally to the animals either for treatment or prophylaxis. (Example of plants in are given in table 1)
7. Cow butter oil rubbed on the animal body to treat mange and ringworm (Alawa et al, 2002).

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8. Locals used grind bark of *Acacia nilotica* and oils extracted from *Butyrospermum parkii* and cow milk for the treatment of footrot. Also Kerosine use to wash the area with footrot, twice until healing. Leaf of the tobacco plant, *Nicotiana tobbacum*, is grinded and applied twice daily to rot area until healing.

C. Allopathic Drugs and Vaccines:

Some very important infectious diseases that occur in epidemics require modern medicines and or vaccinations. Examples of such conditions include Rinderpest, Foot-and-mouth diseases (FMD), and Contagious Bovine Pleuropneumonia (CBPP). This is because they are acute conditions and EVM may not be effective against them.

Also some infectious diseases require precise and quick treatment because of their antigenic variation and also their acute nature. Example, Trypanasomiasis, Haemoparasites (babesia, theileria).

Conditions in working animals and Plants used for their treatment

Disease/Condition	Example of Plant used in Treatment
Helminthosis	<i>Azadirachta indica</i> , <i>Vernonia amygdalina</i> , <i>Kalanchoe crenata</i> , <i>cassia occidentale</i>
Diarrhoea	<i>Anacardium occidentale</i> , <i>Psidium guajava</i> , <i>Adansonia digitata</i> , <i>Deterium microcarpun</i> , <i>Guiera senegalensis</i> , <i>Anona senegalensis</i> , <i>Vernonia amygdalina</i> , <i>Khaya senegalensis</i> , <i>Anacardium occidentale</i> , <i>Guiera senegalensis</i>
External Parasite	<i>Nicotiana tobaccum</i> , <i>azadirachta indica</i> , <i>Tephrosia nana</i> , <i>T. vogeli</i> , <i>Erythrian senegalensis</i>
Skin Condition	<i>Butyrospermum parkii</i> , <i>Khaya senegalensis</i> , <i>Dichrostachys glomerata</i> , <i>Cow butter oil</i> , <i>Local soap</i> , <i>Spent Engine oil</i>
Wound/ Injuries	<i>Cassia tora</i> , <i>Dichrostachys glomerata</i> , <i>Anona senegalensis</i> , <i>Ziziphus spina-christi</i> , <i>Z. rugosa</i> , <i>Colocasia esculentum</i> , <i>Butyrospermum parkii</i>
Footrot	<i>Acacia nilotica</i> , <i>Butyrospermum parkii</i> , <i>Khaya senegalensis</i> , <i>Nicotiana tobaccum</i> , <i>Cow butter oil</i> , <i>Wood ash</i> .
Piroplasmosis	<i>Kalanchoe crenata</i> , <i>Cassia tora</i> , <i>C. occidentale</i>
Respiratory Infection	<i>Psidium guajava</i> , <i>Anogeissus leicarpa</i> , <i>A. scimperi</i>
Dysentery	<i>Adansonia digitata</i> , <i>Dichrostachys glomerata</i>
Trypanosomiasis	<i>Eugenia uniflora</i> , <i>Acacia artaxacantha</i> , <i>Termalinia ivorensis</i> , <i>Alchornea cordifolia</i>
Foot and Mouth Disease	<i>Entada abyssinica</i> , <i>Vitex species</i>

(Alawa et al., 2002; Ibrahim et al., 1984; Kudi 1995)

Issues and way forward for EVM:

1. In many developing countries, many veterinarians, development workers and decision-makers have not examined the potential of EVM in treating livestock diseases. There is a need for a change of attitude in this direction.
2. Complex practices require a system research in order to capture synergistic effects of the different aspects.
3. Feasibility of promoting safe and effective herbal medicines should be investigated. Aspects that should be addressed include
 - quality control
 - sustainability/cultivation
 - local self-sufficiency
 - distribution

4. Viable alternatives to allopathic medicines that will reduce total expenditure on animal health should be promoted.

Intellectual properties right, where applicable, should be respected by researchers and developers.

5. Improving the health of working animals (Training)

- how to treat external parasite
- how to treat internal parasite
- Recognition of disease

Conclusions:

- Most modern drugs are beyond the reach of resources poor animal keepers.
- EVM methods are appropriate for the treatment of many if not the majority of livestock diseases in developing countries.
- Both EVM and modern methods can be used in an integrated way, depending on the situation.
- Local knowledge is at the local level and investments should be concentrated in improving a range of practices that are appropriate and sustainable. This could be through the following;
 - Documentation and validation of plants and management practices
 - Education and training
 - Conservation/cultivation of validated useful plants
 - Importance of treating animals early
 - Nutrition of working animals (especially Equids)

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