

# Introducing ethnoveterinary medicine<sup>1</sup>

*Evelyn Mathias, October 2001*

Ethnoveterinary medicine covers people's knowledge, skills, methods, practices and beliefs about the care of their animals (McCorkle 1986).

## Ethnoveterinary versus modern medicine

Farmers in West Java, Indonesia, raise their goats and sheep in sheds on stilts with a slatted floor, and feed them with cut fodder. As a result the animals have few intestinal worms. If an animal gets ill, the farmer drenches it with a preparation of herbs using recipes learned from her parents or husband.

While West Javanese smallholders commonly boil parts from several herbs, Samburu pastoralists in Kenya often make medicines by soaking just one plant.

These are only two examples of the many ways livestock raisers all over the world keep their animals healthy and productive. 'Ethnoveterinary medicine' contrasts the knowledge developed by local livestock holders from the scientific or 'allopathic' veterinary medicine taught at universities. Both are dynamic and changing. Like scientific veterinary medicine, ethnoveterinary practices have been developed through trial-and-error and deliberate experimentation. But ethnoveterinary medicine is developed by farmers in fields and barns, rather than by scientists in laboratories and clinics. It is less systematic and less formalized, and is usually transferred by word of mouth rather than in writing.

Ethnoveterinary information is in danger of extinction because of the current rapid changes in communities all over the world. In fact, many communities nowadays use a mix of local and modern practices.

Promoting the conservation and use of ethnoveterinary medicine does not mean downgrading or ignoring the value of modern medicine and attempting to replace one with the other. However, it does mean recognising that both types have their strengths and limitations. In some instances, they complement each other, in others, local practices will be the better choice, and again in others modern practices should be recommended (see below).

## Aspects of ethnoveterinary medicine

Ethnoveterinary medicine is often taken to mean using medicinal herbs. However, it has more to offer:

**Information:** Stock raisers commonly know when their animals are sick. They can describe the disease signs, which season the disease commonly strikes, and what types of animals are affected. They also know where to find the best pasture, how to avoid tsetse-infested areas, where to find saltlicks, and many, many other things.

**Practices:** This is much wider than just the use of herbal medicines. It also covers bone-setting, vaccination against pox and other infectious diseases, branding, and careful management practices.

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<sup>1</sup> This paper draws on Mathias-Mundy and McCorkle 1989 and Martin et al. 2001

**Tools and technologies:** These range from simple tools such as thorns to vaccinate animals, to complex animal housing adapted to local conditions. Farmers are familiar with the various materials available in their environment, and skilfully take advantage of their various qualities.

**Beliefs:** Beliefs are commonly thought of as superstitious--something negative that has to be suppressed. Still, some beliefs can be very useful because they improve the animals' condition or prevent them from getting sick. Examples are the feeding of salt that has been blessed, protecting animals against evil winds, and not letting animals on pastures where other animals have died from diseases such as anthrax. So it is advisable to have a close look at beliefs and encourage these if they promote animal health.

**Breeds:** Local breeds, such as dairy buffaloes, are the outcome of centuries of selection. At first sight, they may produce less than introduced breeds, but they may not score as poorly if both input costs and outputs are considered, instead of only the outputs. Local breeds are presently receiving increased attention in connection with attempts to conserve their dwindling genetic resources.

**Human resources:** Knowledgeable farmers, herders and local healers are treasurers of knowledge and can be valuable partners in development projects.

## Variations in ethnoveterinary medicine

Ethnoveterinary medicine differs not only from region to region but also among and within communities. Depending on the work division and professional specialisation, men may know more about large animals while women commonly are more familiar with small animals or with certain type of diseases such as mastitis and neonatal care. Hunters may have a wealth of information on hunting dogs. Knowing about such differences can be crucial in the selection of respondents in research and partners for extension approaches, the design of training courses, and the selection of trainees for community-based animal health workers.

## Limitations and strengths

Like any other type of medicine, ethnoveterinary medicine has both limitations and strengths. Common complaints by stockraisers, extensionists and scientists include:

- Some remedies are inconvenient to prepare or use.
- Certain plants are available only at some times of the year.
- Some treatments are ineffective.
- Some practices are harmful.
- Traditional diagnoses may be inadequate (typically identifying symptoms rather than underlying causes of a disease).
- Dosages are uncertain and remedies are not standard.
- The resource base is deteriorating, making ingredients unavailable for preparing medicines.

Ethnoveterinary medicines are often not as fast-working and potent as allopathic medicines. They may therefore be less suitable to control and treat epidemic and endemic infectious diseases (e.g., foot-and-mouth disease, rinderpest, haemorrhagic septicaemia, anthrax, blackquarter, rabies), and acute life-threatening bacterial infections (e.g., generalised cases of coli- or pyogenes mastitis). For these problems, modern drugs might be the best choice.

But for common diseases and more chronic conditions such as colds, skin diseases, worms, wounds, reproductive disorders, nutritional deficiencies, and mild diarrhoea,

ethnoveterinary medicine has much to offer and can be a cheap and readily available alternative to costly imported drugs. For some diseases, a combination of modern and local remedies and management practices might be preferable.

Even with infectious diseases, ethnoveterinary treatments should not be dismissed out-of-hand. Many drugs used in chemotherapy are based on chemical substances of plant origin, or on the semi-synthetic derivatives of such substances. Some local preventive methods are effective and simple to apply; an example is the pox vaccination conducted by pastoralists. The search for alternatives is especially important, as nowadays any unnecessary use of antibiotics and other chemical drugs is discouraged in the light of residue problems and the growing resistance of micro-organisms to some drugs. Projects should therefore explore whether local treatments are available, and should validate practices that are promising.

## **Understanding and documenting ethnoveterinary medicine**

Both conventional and participatory methods have been used to document local knowledge in general and ethnoveterinary medicine in particular. Both approaches have their place, and their results can be complementary and possibly cross-validate each other. The table in the appendix gives an overview of the strategic advantages of the different methods.

The choice and mix of methods should be flexible and depend on a study's objectives. Important is that the study fulfils at least basic scientific standards to counteract the frequent reproach that the data presented are anecdotal or based on relatively small samples. This does not mean to use complicated statistical methods, but sample sizes should be large enough to be significant, and the different strata of a community should be considered when selecting respondents from stock-raising communities. Depending on the study's objectives, men, women, and children should be interviewed, poor and rich farmers, healers and non-healers, users of ethnoveterinary medicine and non-users.

## **Validating ethnoveterinary medicine**

Ethnoveterinary practices need to be validated before they can be widely promoted. Several levels of validation are possible:

- Tapping the experience of local people, for example, by asking them to rank local treatments according to their perceived efficacy.
- Searching the literature for available information on the botany, phytochemistry, and *in-vitro*, *in-silico* (i.e., computer-based) and *in-vivo* tests, and other relevant aspects.
- Conducting laboratory tests.
- Conducting clinical tests on station or in experimental herds.
- Conducting clinical tests in selected herds kept by smallholders and pastoralists. Alternatively, farmers may conduct their own tests.
- Monitoring the use of remedies in the field.
- Studying a remedy's influence on production and economic parameters.

The exact method or combination of methods will depend on the intended use of the practice to be tested and the purpose of the validation.

### **VALIDATION TO PROVE OR DISPROVE LOCAL CLAIMS**

The methodology for this should be scientifically valid, while at the same time accounting for the fact that traditional remedies might work differently from modern medicines. For example, they may not be as powerful as modern drugs, but they do

not wipe out all disease-causing organisms and thus allow the patient's defence system to get into contact with the organisms and build up immunity. This might be a long-term process and more difficult to determine than (say) counting parasite eggs in the faeces. Therefore studying the efficacy of traditional remedies likely requires a different combination of methods and a longer time horizon than testing modern drugs. For example, the examination of blood samples might be needed in addition to faecal counts.

Besides, ethnoveterinary practices are parts of a complex system, and isolating only one aspect for study precludes insights into the whole system. If a farmer controls worms in her animals through a combination of grazing management and herbal drenches, the drench alone may not produce a distinct effect in clinical trials. Also, the genetic makeup of the local breed may play an additional role in worm control. For such complex practices, systems research is needed to capture synergistic effects of the different aspects.

#### VALIDATION FOR DRUG DEVELOPMENT

If a plant remedy is to be studied for its suitability for drug development, tests have to meet scientific standards. And if a preparation is to be commercialised, it has to be tested according to a country's laws.

#### VALIDATION FOR TECHNOLOGY TRANSFER

While some ethnoveterinary practices are location-specific, others are suited for use in other communities and regions. Examples are the widespread use of papaya as a dewormer and tobacco as an insecticide. Not all aspects of ethnoveterinary medicine are as easily transferable as plant medicines – a plant may not grow in the target area, a practice may be culturally inappropriate to other regions, or it may be too complicated to be easily learned.

Example: branding. Pastoralists around the world treat their animals by burning them with a hot iron. Although its use is controversial among outsiders, it may be beneficial in some conditions. Branding requires special skills but these are difficult to transfer.

When transferring peoples' practices from one location to another, criteria similar to those for other technologies should apply:

<p>Assessing a local practice for its suitability to be transferred to other locations</p> <p><i>Efficacy:</i> Does it work? Is it effective? Under what conditions?</p> <p><i>Cost-effectiveness:</i> Is it cost-effective? Affordable to the poor?</p> <p><i>Availability:</i> Are its 'ingredients' available at this location? In sufficient amounts? Decreasing?</p> <p><i>Understandability:</i> Is it easy to understand? Easy to handle?</p> <p><i>Cultural appropriateness:</i> Is it culturally appropriate? Will it be accepted?</p> <p><i>Effect on different groups in communities:</i> How will it affect the different user- and non-user groups in the village? Who would be burdened, who would benefit?</p> <p><i>Environmental soundness:</i> How does it affect the environment?</p> <p><i>Constraints:</i> What are potential constraints to its use or application? Can they be overcome?</p>
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Source: IIRR 1996

#### VALIDATION FOR FIELD USE IN EXTREME CONDITIONS

In situations 'where there is no vet' nor drugs, or where people cannot afford expensive, imported medicines, healthcare providers may consider practices

- which have been ranked as effective and safe by local healers and herders,

- which have been successfully tested elsewhere and the results have appeared in reliable publications,
- which are known to be safe and widely used in human ethnomedicine or elsewhere in animals.

## Using ethnoveterinary medicine in development

### SOURCE OF APPROPRIATE TECHNOLOGIES

Ethnoveterinary technologies can be the starting point for drug and technology development. Ideally, information obtained from local people should be used within the communities of its origin to ensure that they benefit from their own knowledge. Or a selected remedy can be improved outside of the community through pharmacological and clinical research and then be returned, 'value-added', to its place of origin.

### BASIS FOR COMMON GROUND

Understanding local approaches to animal healthcare and production and being familiar with the information people have can facilitate the planning and implementation of appropriate projects and training efforts. For example, herders' information on disease prevalence and importance can help focus disease-control programmes on those problems the herders see as most pressing.

Using the same vocabulary reduces the chances of misunderstandings and facilitates better communication between technical personnel and local people. It can also enhance the trust local people have in a livestock project or service office. If farmers or herders feel they are respected, they may be more ready to listen to the outsider's advice and work with the outsiders.

### INPUT INTO MONITORING AND EVALUATION

Ethnoveterinary medicine can contribute to monitoring and evaluation. For example, farmers are commonly well aware of the amount of medicinal plants growing in their area. They also have criteria for the 'wellness' of their environment. These criteria can serve as the baseline for monitoring the effects of increased plant use on the local flora. Besides, farmers daily observe their animals and can therefore provide excellent inputs for monitoring the success of treatments.

### SOURCE OF HUMAN RESOURCES

Development efforts can build on the human resources that hold and develop ethnoveterinary knowledge. Knowledgeable livestock keepers and local healers are repositories of knowledge and valuable partners in community-based animal healthcare and other livestock development activities.

## Economics

Up to now, the literature offers little data on the economic impact of promoting ethnoveterinary medicine. There are some indications that the use of ethnoveterinary medicine can have economic advantages (Mathias and Anjaria forthcoming):

- Plant preparations that livestock keepers can prepare themselves from crude materials will cost them less than buying the same mixture ready-to-use, but the latter may be much cheaper than equivalent allopathic alternatives. In Sri Lanka a locally processed herbal wound-powder was found to be as effective as Negasunt<sup>®</sup>, but cost 80-90% less (Anjaria 1996).

- Commercial herbal products may not be in all cases the cheaper alternative. *Karanji* oil, an Indian treatment for mange that could be used instead of Butox<sup>®</sup>, is difficult to get in some parts of Rajasthan, and when it is available, is more expensive than Butox<sup>®</sup> (Köhler-Rollefson pers. com.).
- If commercial herbal drugs are exported to other countries, they may there become nearly as expensive as other imported allopathic drugs (RDP Nepal 1994, pers. com.).
- Scientific research and farmer experiments in Trinidad and Tobago found that adding preparations from plants such as aloe and *Momordica charantia* to the drinking water can improve the productivity and profitability of flocks of broilers. Other sources also state that effective local plant medicines can reduce both household and project expenditures on commercial drugs (Lans 2001).

Conclusions: ethnoveterinary medicine can make an economic difference, but its cost-effectiveness varies, and depends on many different factors. In-depth studies are needed to determine how the economic potential of ethnoveterinary medicine can be best utilised. The example from Trinidad and Tobago highlights that the usefulness is not restricted to smallholders and resource-poor farmers, but also applies to intensive production units.

## Environmental impact

The effect of ethnoveterinary promotion on the environment can vary between two extremes (McCorkle et al. 1999).

Positive:

- Local practices can be environmentally friendlier than their allopathic counterparts. Local tick control methods, for example, are commonly less harmful to the environment than dipping with commercial chemicals.
- Ethnoveterinary projects that stimulate conservation measures and the establishment of herb gardens help maintain biodiversity.

Negative:

- The large-scale promotion and commercial production brings with it a danger that heavily used plant species may become scarce or even extinct. Therefore projects promoting plant medicines on a large scale should be required to monitor their environmental impact and explore how far endangered species can be cultivated.

More data on this is needed.

## Intellectual property rights (IPR)

Traditional practices can be the starting point for the development of technologies, especially commercial drugs. The following activities can help ensure that the originators of the knowledge benefit from its wider adaptation and use (based on Mathias 1994):

- Lobby for policies and legalisation to address the protection of the local flora from overexploitation and the issue of intellectual property rights.
- Inform healers and other community members on IPR issues.
- Provide name of informant (or local innovator) for any piece of information (e.g., a local practice, a method) that is not common knowledge in community.

- Help local people to publish the information they provide under their name. This way it would be possible to pinpoint to specific individuals or groups as originators if a remedy turns out to be so valuable that patent issues arise.
- Compensate local people for their information through:
  - Using the information to further village development.
  - Making a donation to improve village infrastructure.
  - Paying informants or village in cash or kind.
- Return the information on ethnoveterinary medicine so that local people can access and benefit from it through:
  - Storing the information in simple files managed by villagers themselves.
  - Writing reports in simple language and providing copies to the communities.
  - Preparing slideshows or videos.
  - Developing educational materials.
- Link with organisations that have experiences in intellectual property rights. Examples: ICIPE in Nairobi, RAFI in Canada, and the Honey Bee group in India (for addresses, see below). Furthermore, in some countries (e.g., Philippines) there are NGOs focussing specifically on legal issues relating to indigenous knowledge, local resources and property rights.

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Appendix: Strengths and strategic advantages of methods for the recording of indigenous knowledge (IK)

The following table highlights the specific strengths and strategic advantages of methods suitable for the recording of indigenous knowledge.

The table has been adapted from Mathias 1995:23. For details of the different methods, see IIRR 1996.

Research question	Method especially suitable
What are the practices?	Informal interview Key informant panel Focus groups Case studies Participant observation Survey Field observation Transect Mapping Local histories Seasonal pattern Matrix Webbing Taxonomies Venn diagram Use of drawings Sorting and ranking Role play Photo documentation Participatory video
How are they done?	Informal interview Key informant panel Focus groups Case studies Participant observation Field observation Role play Photo documentation Participatory video
Why are they done?	Informal interview Key informant panel Focus groups Case studies Participant observation Matrix Webbing
Who is doing them or who knows about them?	Informal interview Key informant panel Focus groups Case studies Participant observation Survey Field observation Role play Photo documentation Participatory video
Where are they done?	Informal interview Key informant panel

Research question	Method especially suitable
	Focus groups Case studies Participant observation Survey Field observation Transect Mapping Photo documentation Participatory video
When are they done?	Informal interview Key informant panel Focus groups Case studies Participant observation Survey Field observation Local histories Seasonal pattern
How often are they done?	Informal interview Key informant panel Focus groups Case studies Participant observation Survey
How wide-spread is a specific practice in a community?	Informal interview Key informant panel Focus groups Case studies Participant observation Survey
How effective is the practice?	Informal interview Key informant panel Focus groups Case studies Participant observation Sorting and ranking