



A study on the comparative efficacy of herbal and chemical de-wormers, India

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Summary

This practice describes the efficacy of herbal de-wormers vis-à-vis their chemical counterparts. By means of a participatory research approach, the effectiveness of herbal de-wormers based on traditional knowledge has been tested successfully serving as a proof of the importance of local and often orally transmitted expertise to fight livestock diseases.

Description

SEVA (Sustainable Agriculture and Environmental Voluntary Action) is an NGO involved in documenting and disseminating indigenous knowledge and grassroots innovations in Tamil Nadu, as also the conservation of local livestock breeds. For the last 20 years, SEVA has been documenting ethno-veterinary practices for livestock rearing and has trained over 4 000 farmers, some of whom practice as livestock healers in various parts of Tamil Nadu.

1. An action research study by SEVA (Tamil Nadu)

In 2008, SEVA initiated a study on the comparative efficacy of herbal and chemical de-wormers on sheep flocks. Shepherd communities from the Nallampalayam and Vembur clusters in the Thiruppur and Thoothukudi districts respectively, were selected by SEVA to be a part of this

research study. The Nallampalayam and Vembur clusters are home to the Mecheri and Vembur breeds of sheep respectively. Farmers in the area have marginal land-holdings and maintain a flock of 30 to 40 sheep per family. For many households, sheep rearing is the only source of livelihood. The average annual income of shepherds in the area is Rs 30 000 from a herd of 20 sheep.

Sheep in both clusters are reared under an open grazing system. However, in Nallampalayam most farmers also maintain korangadu pasture land for grazing their sheep (korangadu are privately owned pasturelands comprising a combination of cenchrus grass, horse gram, *Phaseolus trilobus* - wild gram - and *Acacia leucophloea* - white bark acacia - trees, surrounded with live fencing of *Commiphora berryii*).

Shepherds in the area have limited access to veterinary health care services. According to data collected by SEVA, the average annual mortality of adult sheep is over 15 percent.

The major diseases accounting for this high mortality are outbreaks of FMD, blue tongue, and PPR:

- FMD (Foot-and-mouth disease): is a highly contagious viral disease affecting both large and



small ruminants, and is transmitted by the picorna virus.

- Blue tongue: is a non-contagious vector borne viral disease affecting sheep, and is transmitted by several species of Culicoides (biting midges).
- PPR (Peste des petits ruminants): also known as goat plague, is caused by a virus. Morbidity up to 100 percent and mortality rates between 20 and 90 percent are common, except in endemic areas or when mild disease occurs.

1.1 Carrying out of the study

The study initiated by SEVA was spread over a period of six months from April to September (summer to pre-monsoon season) 2008 and covered 2 385 sheep belonging to 72 pastoralists in 8 villages in the Thiruppur and Thoothukudi districts, divided as follows:

- Nallampalayam cluster: 1 028 sheep belonging to 40 farmers.
- Vembur cluster: 1 357 sheep belonging to 32 farmers.

These sheep were reared either under an open grazing system and / or on private pasture lands (for example korangadu in Nallampalayam).

Three trial groups were formed as detailed below:

1. T1 – control group (not administered either the chemical de-wormer or the herbal de-wormer).
2. T2 – administered the conventional de-worming drug Fenbendazole.
3. T3 – administered the herbal de-wormer and masala bolus.

Fenbendazole was administered to sheep in the T2 group, once in three months, as per a medically prescribed schedule and dosage of 10 ml per sheep.

The quantity of the herbal de-wormer administered to the sheep was 30 ml for adult sheep and 10 ml for lambs, once every two months i.e. thrice during the study period.

Masala bolus was also administered, as an immunity booster, every alternate month to each sheep in the T3 group. The masala bolus is the size of a large amla (Indian gooseberry) weighing approximately 20 g. The masala bolus was given twice daily for three days every alternate month during the study period.

Faecal samples of all three groups were collected on the 0, 3rd, 7th, 10th, and 14th day of administration of the two de-wormers and sent to the Madras Veterinary College, Chennai, for microscopic assessment of EPG (Eggs per gram) count. Similar data was collected over a period of six months.

2. Study results

It was observed that during the data collection period the sheep in both the T2 and T3 groups were free from symptoms of any infectious diseases.

As per the EPG (egg per gram) count reported by the Madras Veterinary College, reduction in mean EPG was evident in both the treated groups over the untreated group (T1 – control group). The percentage reduction of the faecal egg count on the 14th day of treatment was 78.87 and 73.65 in the Fenbendazole and herbal de-wormer administered group respectively. The overall reduction percentage in EPG on the 14th day after treatment was 94.18 and 88.64 for Fenbendazole and the herbal de-wormer administered groups respectively. The results demonstrated that the effectiveness of the herbal de-wormer was comparable to that of



the chemical de-wormer Fenbandazole.

Considering the zero side-effects of the herbal de-wormer and its easy availability in remote rural areas, the herbal de-wormer had a higher replication potential as an ethno-veterinary practice. The general feedback collected by SEVA from farmers who participated in the research trial, and whose sheep were administered both the herbal de-wormer and the masala bolus, confirmed that flocks were more active and agile than before.

Additionally, farmers observed a positive change in the grazing behaviour of sheep in terms of an increased appetite.

Some shepherds however expressed their difficulty in preparing and administering the masala bolus. Following the positive results of the field experiment, while some shepherds have taken up the preparation and use of both the herbal de-wormer and the masala bolus on a regular basis, a few local healers in the villages use some of the ingredients of the masala bolus to make their own preparations to cure ailing livestock in the vicinity.

The medicinal plants used to prepare the herbal de-wormer and the masala bolus, are found in abundance in waste lands and agricultural fields. A few agricultural farms maintained by NGOs like Pitchandikulam Forests are also a good source of these medicinal plants. Further, since only leaves and branches are required to prepare the herbal de-wormer and the masala bolus, these medicinal plants are never uprooted.

2.1 Composition of the masala bolus

The masala bolus is made in the size of a big amla (Indian Gooseberry) fruit from the ingredients listed below. 50 g each of the above ingredients is collected, shade dried,

pounded well and used:

- Kandankathri (*Solanum surattense*)
- Thumbai (*Leucas aspera*)
- Kuppaimeni (*Acalypha indica*)
- Veeli leaves (*Cadaba farinosa*)
- Peruthumbai (*Leucas martinicensis*)
- Usilai (*Albizia amara*)
- Tulsi (*Ocimum tenuiflorum*)
- Avarampoo (*Cassia auriculata*)
- Moongil (*Bambusa arundinacia*)
- Puliampirandai (*Vitis setosa*)
- Thuthi (*Abutilon indicum*)
- Musumusukkai (*Mukia maderaspatana*)
- Kolunchi (*Tephrosia purpurea*)
- Manjanathi (*Marinda tinctoria*)
- Veliparuthi (*Pergularia daemia*)
- Nilavembu (*Andrographis paniculata*)
- Virali (*Dodonaea viscosa*)
- Mavilangam (*Crateva adansonii*)

In addition, 10 g each of the following ingredients are collected and made into a powder:

- Thippili (*Piper longum*)
- Seeragam (*Cuminum cyminum*)
- Sombu (*Foeniculum vulgare*)
- Perungayam (*Ferula asafoetida*)
- Valmilagu (*Piper cubeba*)
- Sukku (*Zingiber officinale* – dried)
- Pepper (*Piper nigrum*)
- Chillis (*Capsicum annum*)
- Kasakasa (*Papaver somniferum*)
- Lavangam (*Cinnamomum zeylanicum*)
- Fenugreek (*Trigonella foenumgraecum*)
- Omam (*Trachyspermum ammi*)
- Seeds of coriander (*Coriandrum sativum*)

In addition:

- Banana (*Musa paradisiaca*) one inflorescence;
- 500 g of Pirandai (*Cissus quadrangularis*); and
- 250 g of Onion and one Coconut.



And 100 g each of:

- unripe Kaleathi fruits (*Ficus tinctoria*);
- Guava bark (*Psidium guajava*);
- Sotru katralai (*Aloe vera*);
- Garlic (*Allium sativum*); and
- Kollankovaikilangu (*Corollacarpus epigaeus*).

The above ingredients are ground, mixed well and made into boluses and dusted with turmeric powder. Almost 60 to 100 boluses can be made using the above listed quantity of ingredients. The shelf life of the masala bolus is three days.

2.2 Composition of the herbal de-wormer

The herbal de-wormer, also called Poochi marunthu, is prepared with leaves of:

- *Vitex negundo* (five leaved chaste tree);
- *Aloe vera*;
- *Clerodendrum inerme* (wild jasmine);
- *Calotropis*; and
- the seeds of *Azadirachta Indica* (Neem).

One kg of each of these ingredients is ground and made into a liquid extract which can be stored up to 3 months. This is administered orally to adult sheep (30 ml) and lamb (10 ml). The ingredients and method of preparation for both the herbal de-wormer and the masala bolus was shared by two local healers Mr Chellamuthu and the late Mr Mookkan respectively.

3. Validation of the practice

SEVA continues to hold medical camps in various villages across Tamil Nadu to train people on preparing and administering the herbal de-wormer and the masala bolus. It has been observed that villagers readily bring their cattle and other livestock to these camps and help administer the herbal medicines. Usually a central place easily accessible by two-three villages is selected for the camp so that a maximum number

of people and livestock can benefit. SEVA has also supported a landless labourer, Mr Chellamuthu from Karukkampalayam village in district Erode, to set up a small processing unit to prepare the herbal de-wormer.

The de-wormer is sold at Rs 80 per litre. While some livestock rearers come to purchase the de-wormer from the processing unit itself, a number of others place an order over telephone and Mr Chellamuthu delivers the required quantity.

4. Minimum requirements for the successful implementation of the practice

The cost of the herbal de-wormer is comparable to that of the chemical de-wormer Fenbendazole. The herbal de-wormer can also be prepared by livestock rearers on their own as the ingredients are easily available around homestead areas unlike the chemical de-wormer which has to be purchased from a chemist.

This action based research study conducted by SEVA confirms that a participatory process of verification of local practices in combination with scientific assessment techniques has a higher potential for adoption by rural farmers.

5. Further reading

- Promotion of ethno-veterinary practices for small ruminants. An action research study by SEVA, Tamil Nadu

6. Agro-ecological zones

- Tropics, warm

7. Related/Associated Technologies

- 7690

8. Objectives fulfilled by the project

- Resource use efficiency and pro-poor technology