Summarised Report

Aloe ferox Bitter Powder Organic Aloe Product in vitro anthelmintic assay report by University of Pretoria

Department of Paraclinical Sciences
Dated 10 July 2006

Extracted from the report received as follows:

"In vitro anthelmintic investigation of Organic Aloe preparation

Background to livestock worm infestations: - Livestock infestations with gastrointestinal parasites are a major cause of production losses worldwide. In addition, helminth infections are recognized as the most important infections limiting productivity of small ruminants worldwide. Chemical anthelmintic drugs are commonly used to control these infections but a major problem is the development of resistance to these drugs. Anthelmintic resistance is documented as being particularly severe in South Africa in all sheep- and goat-rearing areas and alternatives are being investigated. The use of plants for treating livestock diseases has been practiced for years in South Africa, as in many developing countries. These remedies need to be tested under controlled conditions to evaluate their efficacy and safety.

Two widely encountered internal nematode or roundworm parasites responsible for severe effects in livestock (cattle, sheep and goats) are Haemonchus contortus and Trichostrongylus coluriformis. H. Contortus is commonly known as the barber pole worm (also known as stomach worm or wire worm) and feeds off blood in the host's abomasums (milk stomach), causing anaemia, bottle jaw, weakness, and breakage of wool, intestinal disturbances and death if untreated. T. colubriformis is known as the bankrupt worm, hair worm or black scour worm, and may cause wasting along with constipation or diarrhoea. Weakness and death can occur in young animals when infested with this parasite.

Method of investigation

The Aloe ferox preparation supplied by Organic Aloe was tested for activity in the laboratory against the two-roundworm species described above. The methods used followed the guidelines recommended by the World Association for Advancement of Veterinary Parasitology (WAAVP). Extracts were prepared of the Aloe powder using water and acetone, solvents of different polarities. The extracts were firstly evaluated for their ability to inhibit hatching of the eggs of the two-roundworm species. Secondly, the ability of the Aloe extract to prevent the development of the larval stages of the worms was investigated. Thiabendazole, the active ingredient of a commercially used parasiticide , was used as a positive control and water was the negative control. The positive control is known to give a positive result and confirms that the basic conditions of the experiment are able to produce positive results. The negative control is known to give a negative result, and the values of the negative control may be treated as a "background" value to be subtracted from the test sample results.

The average inhibition percentage at each concentration of Aloe extract was calculated compared to the negative controls.

Results

The dose or concentration at which half of the worms are inhibited (detected by microscope) is an internationally accepted means of comparing the activity of extracts or chemicals. The calculated concentration at which the Aloe extracts prepared with water stopped the hatching of half of the scour worm eggs was 21.9 mg/ml. The calculated concentration at which the Aloe extract stopped the hatching of half of the barber pole worm eggs was 88.4 mg/ml. The acetone extracts were generally more active than the water extracts.

The calculated concentration at which the Aloe extracts prepared with water stopped the larval development of half of the black scour worm larvae was 2.6 mg/ml, while the concentration for acetone extract was 5.2 mg/ml, so water extracts was more effective at stopping the development of larvae into adult worms. Similar concentrations were observed for barber pole worm.

Conclusions

Extracts of the Aloe Ferox powder supplied by Organic Aloe have shown good inhibitory effects on two roundworm species in laboratory tests, affecting both the hatching of eggs and the development of larval stages. Studies conducted by other researchers have shown that an extract of the leaf was toxic up to a concentration of 20 g/kg. This indicates that the Aloe powder may be effective in combating roundworm infestations in livestock animals without having an undesired effect on the animals. It may be dosed at an effective concentration that kills the majority of eggs and inhibits larval development while being non-toxic. Studies using live animals are recommended to fully validate this assumption and the concentration to be dosed, but extremely promising results have been obtained using our laboratory tests.

Investigator

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