



RESEARCH COMMUNICATION

Treatment of natural ovine malignant theileriosis with a chloroform extract of the plant *Peganum harmala*

M. MIRZAIEDEHAGHI*

Pathobiology Department, School of Veterinary Medicine, Shahid Bahonar University of Kerman Kerman, Iran

ABSTRACT

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One hundred sheep naturally infected with *Theileria lestoquardi* were treated with a chloroform extract of the plant *Peganum harmala*. The treatment was continued for 5 days, the dose of extract being 5 mg/kg per day. Sixty-five of the sheep responded to treatment and recovered but 35 did not and died. The cure rate was 65%.

Keywords: Malignant ovine theileriosis, *Peganum harmala* extract, sheep, *Theileria lestoquardi*

INTRODUCTION

Malignant theileriosis of sheep is a highly fatal acute or subacute disease caused by the tick-borne protozoan parasite, *Theileria lestoquardi* which is transmitted by ticks of the family Ixodidae, particularly *Hyalomma anatolicum anatolicum* (Hooshmand-Rad & Hawa 1973; Morel & Uilenberg 1981). The chemotherapeutic efficacy of a number of compounds including parvaquone (Clexon) and buparvaquone (Butalex) has been tested for the treatment of the disease. Tests have shown that these two compounds are effective (Hooshmand-Rad 1989) but they are not easily and quickly eliminated from the body of animals (McHardy, Wekesa, Hudson & Randall 1985) which can constitute a public health hazard if milk and meat of treated animals are consumed by humans. The therapeutic effect of the alkaloids of the plant *Peganum harmala* has been

investigated for the treatment of tropical theileriosis in cattle which is caused by *Theileria annulata* and it was shown that they are effective (Fan, Liang, Men, Gao, Li, Zhao, Hu, Dang, Zhang, Preston & Yin 1997; Hu, Fan, Liang, Zhao, Dang, Gao, Dong, Preston & Yin 1997) In addition, it has been shown that these alkaloids, when inoculated intramuscularly do not infiltrate the muscular tissue surrounding the inoculation site but are also rapidly eliminated from the body (Puzii & Serov 1983). The objective of this study was to study the effect of total alkaloids of *P. harmala* when used for the treatment of naturally infected cases of ovine malignant theileriosis.

MATERIALS AND METHODS

One hundred sheep suffering from natural infections of malignant theileriosis and belonging to farmers were selected. They were of different ages but all were in the primary phase of the disease as determined by microscopic examination of Giemsa-stained prescapular lymph node biopsy smears in which

* E-mail: dr_mirzaie_mo@mail.uk.ac.ir

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fairly numerous schizonts were present. Similar examination of blood smears revealed that piroplasm parasitaemia was rare. In addition, only one or both prescapular lymph node(s) were slightly to moderately enlarged and the rectal temperature was between 40.5 and 41.9°C. A chloroform extract of *P. harmala* was prepared from the stems and leaves of the plant according to the method described by Mirzaie & Shaddel (2004). This was administered intramuscularly to the sheep at a dosage rate of 5 mg/kg body mass once a day for 5 days (Fan *et al.* 1997). After treatment the rectal temperature of the sheep was measured daily in the morning until it dropped to normal values. Their vigor, appetite, visible mucous membranes and other signs were observed clinically every day. In addition, Giemsa-stained smears prepared every three days from biopsy material of a prescapular lymph node and blood smears were examined for 20 days after commencement of the treatment.

RESULTS

Before treatment lymph node biopsy smears from enlarged prescapular nodes and blood smears showed schizonts or piroplasms, respectively, of *T. lestoquardi* in all the sheep. However, 12–20 days after the commencement of the treatment schizonts and piroplasms could not be detected in 65 of the sheep. In addition other clinical signs and fever disappeared in these sheep and they all recovered. The clinical signs and parasitemia of the other 35 sheep became progressively more severe and all of them died.

DISCUSSION AND CONCLUSION

In this study 65% of the sheep recovered after treatment but in another experiment reported by Mirzaie & Shaddel (2004) five sheep which had been experimentally infected with *T. lestoquardi* and then treated with an extract containing the alkaloids of *P. harmala*, all recovered. The reasons for this apparent discrepancy in the success rate of the treatment in our experiment and that of Mirzaie & Shaddel (2004) could be the different environmental conditions in which their sheep were maintained, the small numbers of sheep they used and the fact that the infection was experimentally induced. Our results are in agreement with that of other experiments in which the alkaloids of *P. harmala* were used for the treatment of tropical theileriosis in cattle (Agaev, Mirzabekov, Gumbatov & Mirzabekov 1977; Vecherkin, Puzii, Romakhov & Tribunskii 1977; Charyev & Khu-

daiberdyev 1978; Levchenko 1978, 1979; Puzii, Vecherkin, Romakhov & Vecherkin 1979; Puzii, Vecherkin, Toptaev, Tsyganova & Duisheev 1982; Fan *et al.* 1997; Hu *et al.* 1997).

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