USE OF IVERMECTIN TO CONTROL SARCOPTIC MANGE IN GOATS IN INDONESIA

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SUMMARY

The results of three experiments aimed at controlling sarcoptic mange in goats in Indonesia are reported. In Experiment 1 treatment with ivermectin (0.2mg/kg body weight) or coumaphos (0.05% dip solution) resulted in a significant reduction in mite numbers and an increase in body weight while in the untreated controls all animals had to be withdrawn from the experiment due to severity of infection. In Experiment 2 three treatment levels of ivermectin were shown to be equally effective in reducing mite numbers, while again all untreated control animals were withdrawn. The third experiment demonstrated a significantly greater reduction in mite numbers following two doses of ivermectin at a seven day interval when compared to a single dose. Again the majority of untreated control animals were withdrawn. Future control strategies and reasons for failure to eliminate the presence of mites are discussed.

INTRODUCTION

Mange caused by Sarcoptes scabiei is the most frequently reported disease of goats in Indonesia with over 70,000 cases being reported to local Veterinary Services in 1984 (Directorat Jenderal Peternakan, 1985). Clinically the disease is characterised by weight loss, reduced productivity and, if infestation levels are high, a high level of mortality.

In Indonesia goats are usually kept by small-holder farmers in villages and the number of animals kept by each farmer is low, usually between four and 10 animals. Treatment of sarcoptic mange ranges from physically removing the mites by washing and scrubbing infected goats to application of motor oil to suppress mite numbers. Organophosphate chemicals are used but only to a limited degree due to cost and the need to mix relatively large quantities to bathe only a few animals.

The abundance of reports on the efficacy of ivermectin in controlling Sarcoptes spp. infections in domestic animals (Lee, Dooge and Preston, 1980; Yaswinski, Pote, Tilley, Rodriguez and Greenway, 1981; Lavigne and Smith, 1983; Dakkak and Ochelli, 1986; and many others) prompted investigation of the possible use of ivermectin to control S. scabiei in goats in Indonesia. Ivermectin being an injectable small dosage compound would be ideal for the above mentioned small-holder producers due to its ease of use.

The current report presents a review of three experiments conducted at the Research Institute for Veterinary Science, Bogor, Indonesia to determine the ability of ivermectin to control sarcoptic mange in goats and to give some
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indication of the most appropriate methods of use within a strategic control programme.

MATERIALS AND METHODS

Experimental animals

Goats naturally infected with *S. scabiei* were purchased from a local market in Bogor. After purchase and at three weekly intervals during the experiments the goats were treated with a broad spectrum anthelmintic (Valbazen, Smith Kline) to control gastro-intestinal parasitism. Regular monitoring of coccidia oocyst numbers enabled treatment with a coccidiostat (Daimeton-Daiichi, Seiyaku, Japan) when necessary. Goats showing signs of respiratory disease were treated with antibiotics (tetracycline or penicillin-streptomycin) and Vitamin B complex. Goats in which clinical symptoms became severe were excluded from further participation in the trial by euthanasia (Letha-Barb, Arnolds, Australia).

Individual animals were tagged before random allocation into treatment groups. The groups were housed separately in above-ground pens with slatted floors for the duration of the experiments. Feed consisted of a combination of leaves and grasses collected from a nearby rubber plantation and from areas close to the holding pens.

Mite counts

Experiments 1 and 2

Mite numbers were assessed by counting the total number of mites (live and dead) from a 4 cm² skin scraping taken from an area of heavy infection. Areas showing clinical signs of *Sarcoptes* spp. infection were usually the ear, nose or neck of the goat.

Experiment 3

Mite numbers were assessed by counting the total number of live mites from three skin scrapings of 4 cm² taken from the ear, nose and neck. This procedure enabled a more accurate assessment of the effect of ivermectin treatment on the mite population.

Experimental procedure

Experiment 1

In order to compare the abilities of ivermectin and coumaphos to control sarcoptic mange 25 goats were divided into three groups and exposed to the following treatment regimens.

1. Nine goats treated with ivermectin at 0.2 mg/kg (Ivomec, MSD) subcutaneously on three occasions with intervals of 20 days between treatments.
2. Eight goats dipped with 0.05% coumaphos (Asuntol, Bayer) on five occasions with intervals of 10 days between treatments.
3. Eight untreated controls.

Mite numbers and body weights were recorded for each goat every 10 days for a period of 90 days.

Experiment 2

In order to improve on the result observed in Experiment 1 this experiment was designed to investigate the possibility that increased dose rates of ivermectin