

LEVAMISOLE RESISTANCE IN GOAT FARMS IN KELANTAN: IS IT DEVELOPING?

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Introduction

Gastrointestinal nematode infection is one of the major problems in the goat industry worldwide but its control is limited by the widespread anthelmintic resistance. This problem emerged in Malaysia since 1990s with detection of resistance on benzimidazoles and macrocyclic lactones. About 10 years ago, levamisole was the only anthelmintic found to be effective against gastrointestinal nematodes in goat farms (n=8) in Kelantan (Basripuzi et al., 2012). However, the current status of levamisole in Kelantan is still unknown. Hence, this study aimed to determine the prevalence of gastrointestinal nematode infection and investigate the latest status of levamisole resistance in selected goat farms (n=3) in Kelantan.

Keywords: levamisole, anthelmintic resistance, goats, Kelantan

Materials and Methods

Faecal samples that were collected from a total of 73 goats in three farms located in Bachok and Kota Bharu, Kelantan were subjected to McMaster method, faecal culture and genus identification of infective stage larvae, L3. The prevalence was determined based on the number of identified L3 genus divided by the total number of observed L3. The samples were screened for the criteria of Faecal Egg Count Reduction Test (FECRT). Then, the goats in each farm were divided into control and treatment groups with approximately similar means of faecal egg count (FEC). The goats in the treatment group were administered with levamisole according to the manufacturer's recommended dosage. The faecal samples were collected 7 days post-treatment and also subjected to McMaster method, faecal culture and L3 identification. The Faecal Egg Count Reduction Percentage (FECR%) was calculated according to the formula provided by Coles et al. (1992). Levamisole resistance was determined if FECR% value was less than 95% and the lower confidence level of 95% was less than 90%.

Results and Discussion

Haemonchus sp. was identified as the most prevalent nematode genus in Farm B (91%) and Farm C (100%). *Trichostrongylus* sp. and *Oesophagostomum* sp. were detected in Farm B with low prevalence (<10%) (Figure 1). No L3 was observed in Farm A. The findings were expected as a previous study (Basripuzi et al., 2012) showed high prevalence of *Haemonchus* sp. in comparison to the other nematode genus.



Figure 1: Prevalence of nematode in selected goat farms in Kelantan

Levamisole resistance was detected in Farm B that met the criteria for FECR% of 88% and 95% lower confidence level of less than 90% (Table 1). However, resistance was not suspected in Farm C based on low mean FEC in both treatment and control groups. Farm A was excluded from the FECRT due to the absence of nematode eggs.

Table 1. Levamisole resistance status in the selected goat farms in Kelantan

Farm	N ¹	Status	Post-treatment		FECR ³ (%)	95% CI ⁴	
			Levamisole	Control		Lower	Upper
Farm B	20	Resistant	245	2041	88	1	99
Farm C	10	Low count	0	70	100	70	100

¹No. of animals; ²Faecal egg counts; ³Faecal egg count reduction; ⁴CI = confidence interval

Conclusion

Consistent with the previous study, *Haemonchus sp.* was still identified as the predominant nematode infecting goats in Kelantan. In contrast to the previous study that showed negligible resistance to levamisole, the current study revealed that levamisole resistance has been developed in at least one goat farm in Kelantan. Nonetheless, more farms must be included in the study to confirm levamisole resistance status among goat farms in this state.

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References

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