Nematodirus battus

*Nematodirus battus* is an important nematode parasite found in the small intestine of lambs. It can cause diarrhoea, ill thrift and death. It has an unusual epidemiology; historically eggs have required chilling followed by a period of warmer temperatures in order to hatch to release their infective larval stage.

Currently we cannot correlate gene frequency with clinical efficacy of BZ anthelmintics. It is also unclear as to how the anthelmintic resistance has arisen in multiple areas after almost 60 years of usage against this parasite. There are a number of possible theories:

- Multiple spontaneous, recurring mutations
- Dissemination from a single source
- Selection on pre-existing mutation

**Hatching behaviour**

Nematodiriosis is typically described as a spring-time disease of young lambs transmitted from one year’s lamb crop to the next. However, in recent years the behaviour appears to be changing and is now regularly observed out with spring. The hatching of *Nematodirus* eggs was historically believed to, and may still, be highly dependent upon climatic conditions but the pattern of hatching is changing.

**Anthelmintic resistance**

Benzimidazoles, (1-BZ) remain the anthelmintic of choice for the control of *N. battus* due to it’s high safety index and high efficacy on most farms. This is despite resistance to benzimidazoles in other gastro-intestinal nematodes in sheep in the UK.

The first instance of anthelmintic resistance in this parasite, in the world, was detected by the diagnostic scanning surveillance service of the APHA and confirmed by collaboration with the Moredun Research Institute.

Further work has elucidated the molecular basis of this resistance to the benzimidazole class of anthelmintics and allowed investigations into its prevalence on a large number of populations (n=339) from across GB. 1-BZ-resistance is conferred by a mutation within the β-tubulin isotype 1 gene and a genotyping assay has been developed to assess the mutation frequency from individual eggs and/or larvae of *N. battus*. Resistant genes have been detected at a low prevalence (~5%) but on around a third of the farms examined with several potential ‘focal regions’ of high level resistance identified.

**Anthelmintic resistance**

1-BZ resistance in *N. battus*. Mitchell, S., Mearns, R., Richards, I., Donnan, A.A., Bartley, D.J. Veterinary Record (2011) 168 (23) 623; DOI: 10.1136/vr.d3584


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