

The effect of season upon the life cycle and development of *Haemonchus contortus* in experimentally infected lambs

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Haemonchus contortus eggs and larvae are routinely used in studies involving anthelmintic research to combat gastrointestinal nematode infection. Although it is known that *Haemonchus contortus* larvae arrest their development within the host during the winter months, it is unknown how season or age of the adult worm affects the hatchability of eggs or the efficiency with which the larvae artificially exsheath *in vitro* or *in vivo* within the rumen. The objective of this study is to determine the role of season and age of adult *H. contortus* on hatchability of eggs and ability of resulting infective larvae to exsheath artificially *in vitro* or *in vivo* within the rumen. Two lambs will be experimentally infected (10,000 L3) at the start of each season (autumn equinox, winter solstice, vernal equinox, summer solstice; n=2/season). Feces will be collected monthly for up to six months following each infection. Egg hatchability will be tested and L3 will be subjected to *in vitro* exsheathment using CO₂ and *in vivo* exsheathment within ruminally fistulated ewes. Results: Fall cycle: Egg hatchability was >95% each month of testing (4 months). The average *in vitro* exsheathment for month one and four of the fall cycle was 70 ± 9% (mean ± SEM) and 22 ± 2% respectively and *in vivo* exsheathment was 70 ± 4% and 70 ± 8% respectively. The fecal egg count dropped from 5575 to 475 eggs/g from the beginning to the end of the cycle. Sampling is ongoing. Statistical analysis is pending. Results of this study could identify constraints posed by seasonal changes in using *H. contortus* eggs and L3 in *in vitro* and *in vivo* assays.