

Summary of the PhD Thesis No D 98-189, The Faculty of Veterinary Medicine, Urmia University.

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Title of thesis: Hypobiosis phenomenon and molecular characterization of species diversity of parasitic nematodes in abomasum of slaughtered sheep in Ilam province, Iran.

Summary:

Parasitic nematodes of ovine abomasum are of economic and hygienic importance. This study was aimed to evaluate frequency, species diversity, and natural occurrence of arrested larvae development of parasitic nematodes in the abomasum of slaughtered sheep in Ilam Province, west of Iran. In this study, a total number of 240 of abomasa were randomly collected from the slaughtered sheep at industrial slaughterhouses in Ilam city between 2017 and 2018 at different seasons (spring, summer, fall, and winter). The abomasa and content were washed and nematodes were removed. They were morphologically identified. Tissue specimens of abomasum were also taken from different six anatomic parts to do extract arrested larvae DNA, then the rest of abomasum used for peptic digestion (PDM). The genomic DNA was extracted from adult male worms and abomasal tissue and a 300bp-fragment-length from internal transcribed spacer 2 ribosomal ribonucleic acid (ITS2-rRNA) gene was amplified for adult worms and a fragment of 110 bp for *Marshallagia marshalli* larvae and 946 bp fragments of *Ostertagia circumcincta* larvae were amplified by ITS2-rRNA PCR. Overall frequency was 66.7% (160/240). Five species of 4 genera of nematodes including *Marshallagia marshalli* (43.7%), *Marshallagia occidentalis* (2.5%), *Ostertagia circumcincta* (15.5%), *Haemonchus contortus* (0.04%), and *Parabronema skrjabini* (5%), and were identified. The molecular results of adult male worms except *Parabronema skrjabini* were presented amplification of about 300bp for the ITS2 rRNA molecular marker. Comparisons of the sequences from these isolates with other available reference sequences in GenBank, using BLAST search, revealed that some isolates had great similarity (more than 99%) with *H. contortus*, and the others had high homology with *M. marshalli* and *O. circumcincta*. A representative selection of sequences deposited in GenBank database under accession numbers MK760915-MK760919. Compared with their most closely related nucleotides in GenBank, intra-species divergence of isolates of *H. contortus*, *M. marshalli*, *O. circumcincta* in this study accounted for 0-1.8%, 0% and 1.1-5.5%, respectively; while inter-species sequence variation among sheep nematodes were significantly higher, ranged from 0 to 26.9%. This study revealed a significant frequency of parasitic nematodes in sheep abomasum and species diversity of Trichostrongylid nematodes in the region. Was not observed larvae abomasum in the peptic digestion method. But molecular evidence elucidated the presence of arrested larvae development of *M. marshalli* and *O. circumcincta* in fall and early winter. It was also concluded that environmental condition for hypobiosis of parasitic nematodes of sheep abomasum was hospitable in the region and molecular

tools were a reliable technique to detect hypobiotic nematodes diversity. Public awareness programs are recommended to encourage sheep owners for using accurate anthelmintic medicines with correct repetition.

Key words: Hypobiosis, Nematode, Abomasum, Sheep, Ilam.