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Abstract

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Parasitic nematodes—From genomes to control

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Abstract

The diseases caused by parasitic nematodes in domestic and companion animals are major factors that decrease production and quality of the agricultural products. Methods available for the control of the parasitic nematode infections are mainly based on chemical treatment, non-chemical management practices, immune modulation and biological control. However, even with integrated pest management that frequently combines these approaches, the effective and long-lasting control strategies are hampered by the persistent exposure of host animals to environmental stages of parasites, the incomplete protective response of the host and acquisition of anthelmintic resistance by an increasing number of parasitic nematodes. Therefore, the challenges to improve control of parasitic nematode infections are multi-fold and no single category of information will meet them all. However, new information, such as nematode genomics, functional genomics and proteomics, can strengthen basic and applied biological research aimed to develop improvements.

In this review we will, summarize existing control strategies of nematode infections and discuss ongoing developments in nematode genomics. Genomics approaches offer a growing and fundamental base of information, which when coupled with downstream functional genomics and proteomics can accelerate progress towards developing more efficient and sustainable control programs.

Keywords: Parasitic nematodes; Expressed sequence tags; Genomics; Genetics; Anthelmintics; vaccines

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