Studies on the fungal pathogens of honeybees in Croatia: molecular species identification

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Abstract

Various fungal pathogens, e.g. Nosema, Ascophaera and Aspergillus species cause severe colony losses of European honeybee (Apis mellifera) and due to mycotoxin production Aspergillus species can impair the quality of honey and risk the health of beekeepers as well. Variation has been observed recently in the species composition of bee pathogenic fungi, which has to be studied to aid pest management strategies.

Bees were collected from managed colonies in Croatia. The high number of Nosema spores detected in the midguts (10⁶ and 10⁷/bee) shows severe diseased status of the colonies. DNA extraction from the midguts and a species specific primer-based method, suitable for the detection of Nosema apis, N. ceranae and N. bombi, were optimized and the analysis revealed the exclusive presence of N. ceranae in all the examined samples. These findings indicate that N. ceranae, known before as the pathogen of bees in Asia only, has appeared in Croatia as well, superseding N. apis in the Western countries.

This study was the initial step of a large-scale survey, aimed at the examination of Nosema, Ascophaera and Aspergillus species in bee colonies in different countries, as well as the development of potential strategies for biological pest management.

Key words: Apis mellifera, Croatia, Nosema ceranae

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