

Sensitivity of *Dermacentor reticulatus* ticks to entomopathogenic fungi from the genus of *Fusarium* isolated from ticks

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INTRODUCTION. Ticks (Acari: Ixodida) are a large group of ectoparasites of the great medical and veterinary importance, both due to the direct effects of parasitism and the ability to transmit pathogens from various systematic groups. The need to limit the negative effects of parasitization caused the necessity of implementing the control methods of their population. Biological control is a method, which is chosen more and more often. Entomopathogenic fungi are particularly promising in this area. However, data regarding their effectiveness against ticks are fragmentary and focus mainly on species that don't occur in Poland. Due to the varied virulence of entomopathogenic fungi against different tick species, it is necessary both assessing the sensitivity of known entomopathogenic isolates as well as isolating new strains and then verify their effectiveness against local tick population.

OBJECTIVES. The aim of the study was to isolate entomopathogenic fungi from the ticks and to assess their effectiveness against the local population of *Dermacentor reticulatus*.

MATERIALS & METHODS. Ticks were collected from March to October in 2018 in the Osobowicki Forest, using the standard flagging method. Among collected ticks, only specimens with observed mycelium growth on the surface were chosen to entomopathogenic fungi isolation. The fungi strains, grown on PDA agar, were identified on the base of morphology and the molecular method (sequence analysis of ITS4 and ITS5). Two strains of entomopathogenic fungi identified as *Fusarium sporotrichioides* and *Fusarium* sp. were used for the biotest. For the bioassay four dilutions of conidia for each strain and 200 adult ticks were used (separately 10 females and 10 males for each dilution and for the control). Mortality was monitored daily for 3 weeks.

RESULTS. At the highest conidia concentration of *F. sporotrichioides* (106 conidia/ml), the mortality rates of *D. reticulatus* ticks reached 80% for females and 50% for males. LC_{50} value for females was $6,8 \times 10^2$ cfu/ml and $6,5 \times 10^5$ cfu/ml for males. In the case of the *Fusarium* sp. at the highest conidia concentration (108 conidia/ml), female mortality was 50% and males 40%. LC_{50} value for females was $1,1 \times 10^9$ cfu/ml and $3,7 \times 10^9$ cfu/ml for males.

CONCLUSION. The conducted research indicates the potential for the use of strains isolated from ticks of the genus *Fusarium* spp. in the control of the *D. reticulatus* tick population. However, further *in vivo* research is necessary to confirm the usefulness of *Fusarium* strains in ticks biocontrol in environment.