

# Single and Mixed Infections in *Ips typographus* (Coleoptera: Scolytinae) Caused by the Entomopathogens *Entomopoxvirus typographi* (Virales), *Gregarina typographi* (Sporozoa) and *Chytridiopsis typographi* (Microsporidia)

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**Abstract:** Single and mixed infections in *Ips typographus* in 7 localities from Vitosha Mountain and Rhodopes Mountain were investigated. From all 2830 specimens of *I. typographus*, 1136 specimens (40.1%) had single infections – 35.1% with *Gregarina typographi*, 3.9% with *ItEPV* and 1.1% with *Chytridiopsis typographi*. Double infections had 83 specimens (3%) of *I. typographus*. Double infections *Gr. typographi* + *ItEPV* occurred in 2.3% from all investigated bark beetles, the infection *Ch. typographi* + *ItEPV* was detected in 0.5% and the infection *Ch. typographi* + *Gr. typographi* – in 0.2%. Triple infections caused by *ItEPV* + *Gr. typographi* + *Ch. typographi* were detected only in 5 specimens.

**Key words:** infections, *Ips typographus*, entomopathogens, *Entomopoxvirus typographi*, *Gregarina typographi*, *Chytridiopsis typographi*