

Antibacterial activity of entomopathogenic fungi isolated from *Apis dorsata* (Giant Honeybee) and *Vespa affinis* (Lesser Banded Hornet) in Sri Lanka

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The global rise in bacterial drug resistance highlights the urgent need for novel antibiotics. Entomopathogenic fungi (EPF) represent an underexplored yet promising source of antimicrobial secondary metabolites. This study reports, for the first time, the isolation of EPF from *Apis dorsata* and *Vespa affinis* in Sri Lanka and the evaluation of their crude extracts for antibacterial activity. EPF were isolated from surface-sterilized insect cadavers, cultured on PDA, and extracted with ethyl acetate. Molecular methods were used for fungal identification. Antibacterial activity of crude extracts was assessed by agar disc diffusion and bioautography against *Staphylococcus aureus*, *Bacillus cereus*, *Escherichia coli*, and *Pseudomonas aeruginosa*, using methanol and gentamycin as negative and positive controls. Nine fungal isolates from *A. dorsata* and eight from *V. affinis* were obtained. The crude extract of *Talaromyces aculeatus* (BB1) from *A. dorsata* showed strong activity against *E. coli* (13 mm inhibition zone at 400 µg/disc; $P > 0.05$ vs. gentamycin) and additional activity against *S. aureus* in bioautography. *Aspergillus nomius* (VA7) inhibited *B. cereus*, while *Aspergillus niger* (BB10) was active against *S. aureus*. These findings reveal that EPF from *A. dorsata* and *V. affinis* are promising sources of novel antibacterial agents, with, particularly *T. aculeatus*.

Keywords: Bioautography, *Escherichia coli*, Gram-negative bacteria, Microbial drug resistance, Secondary metabolites