Evaluation of Entomopathogenic Fungi Isolates for Control of Sweetpotato Weevils (*Cylas formicarius* Fab.)

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**Abstract**

The objective of this work is to identify five entomopathogenic fungi isolates collected from Hungary using molecular techniques and evaluate their virulence to sweetpotato weevils (*Cylas formicarius* Fab.) in laboratory conditions. Molecular identification was made by sequencing the ITS - rDNA region. Pathogenicity study was based on mortality of adults of *Cylas formicarius* inoculated with Conidia $10^8$ conidia ml$^{-1}$. The results of sequencing of the ITS - rDNA region indicates that the MHU1, MHU2 and MHU3 isolates belong to the clade of *Metarhizium anisopliae*, which was identified as *Metarhizium anisopliae* with the sequences of ITS – rDNA region similar from 99 % to 100 %. Other two isolates MHU4 and MHU5 showed a high degree of siminarity with *Pencillium variabile* (99 %). Laboratory bioassays were conducted to assess the pathogenicity of 4 isolates of *Metarhizium anisopliae* (MHU1, MHU2, MHU3 and MVN1) and 2 isolates of *Penicillium variabile* (MHU4 and MHU5) toward sweetpotato weevils (*Cylas formicarius* Fab.). The *Metarhizium anisopliae*-MVN1 that was isolated from sweetpotato weevils death in Vietnam used as control. The pathogenicity tests show that three *Metarhizium anisopliae* isolates (MHU1, MHU3 and MVN1) caused early adult sweetpotato weevils adults mortality rate from 44.4 % to 50 % at four days after treatment. At six days after treatment, two *Metarhizium anisopliae* (MHU1 and MHU3) isolates were highly virulence on adult sweetpotato weevils adults with the mortalities 92.5 % and 94.2 %, repectively, and same the virulence degree of *Metarhizium anisopliae*-MVN1 isolate (100 % mortality rate). Four isolates *Metarhizium anisopliae* (MHU1, MHU2, MHU3 and MVN1) reached 100 % mortality rate as the same the rate of colony growth on death adult sweetpotato weevils adults at 10 days after treatment. However, two isolates of Penicillium variabiles were not pathogenic to *Cylas formicarius* with from 2.2 % to 3.3 % mortality rate. It is proved that two *Metarhizium anisopliae* isolates (MHU1 and MHU3) have great potential as biological control agents against sweetpotato weevils.

**Keywords:** ITS - rDNA molecular, *Metarhizium anisopliae*, sweetpotato weevil

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