

Selection, Isolation, and Identification of Entomopathogenic Bacteria and fungi against Spodoptera frugiperda J.E. Smith in Maize

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Abstract	<p>Spodoptera frugiperda is one of the most devastation pests of maize. The control of S. frugiperda so far relies on synthetic pesticides, which can cause deleterious effects on the environments, especially when the insects start to exhibit resistance. The use of entomopathogenic bacteria and/or fungi could provide environmentally friendly alternatives in controlling S. frugiperda. Selections were started by collecting dead S. frugiperda larvae from several locations. These specimens were placed in PDA and NA media. The isolated bacteria and fungi were purified and individually tested on S. frugiperda larvae to determine the rates of mortality and feed consumption. This study employed a complete randomized design and trials were repeated three times. Results showed that Lia and Lib bacterial isolates produce mortality rates of 50% and 23.33%, respectively, on S. frugiperda larvae. Fungal isolates P1, P2, K2, and K3 produced mortality rates on S. frugiperda larvae in the range of 10-16.67%. The highest reduction of feed consumption was produced by K3 isolate at 34.16%. Lia, Lib, P1, P2, and K2 isolates decreased feed consumption at 14.77%, 26.87%, 24.02%, 33.18, and 31.14%, respectively. Molecular identifications showed that Lia and Lib isolates were Aeromonas hydrophila strain DUCC5728HX-3 and Acinetobacter soli strain GFJ2, respectively. This is the first report on entomopathogenic bacteria on S. frugiperda larvae. Fungal isolates K2, K3, P1, and P2 were identified to be Penicillium citrinum strain DUCC5728, Metarhizium rileyi strain 936, and Aspergillus flavus strain KU20018.4, respectively.</p>
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Author	Ir LOEKAS SOESANTO, M.S, Ph. D