

Study of the pathogenic mechanism of Laodelphax striatellus infected with Metarhizium anisopliae var, anisopliae.

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Summary

Smaller planthopper (Laodelphax striatellus F'allen) is a major pest insect for rice plant in central and southern parts of Taiwan in recent years. Pesticides are frequently used by farmers for controlling this pest insect. However, uses of biological control for insects would more effective.

Based on Koch's postulate, a strain (MA-805) of Metarhizium anisopliae isolated from Laodelphax striatellus was confirmed to be an entomopathogen and had high pathogenesis to this L. striatellus. Aided by the findings from histological section, enzyme function, and electron microscope scanning techniques, the infection mechanism for MA-805 was found. The spores of Metarhizium anisopliae first attached to insect cuticle, produced appressorium from mycelia terminal and then dissolved insect cuticle with chitinase, lipase, and protease. The penetration peg penetrated into the organs of insect and began reproductive growth. The organs of insect were destroyed by these reproduction or killed by the toxins produced by Metarhizium anisopliae. Enzymes secreted by this entomopathogen were amylase, lipase, protease, and chitinase, but no pectate lyase.