

Insecticidal toxin secreted by bacterial symbionts of native Entomopathogenic Nematodes.

J.Gulsar Banu, B.Dhara Jothi and Nandini Gokte Narkhedkar.

Entomopathogenic nematodes belonging to the genera, *Steinernema* and *Heterorhabditis* are lethal insect parasites that occur in natural and agricultural soils around the world. Many of the entomopathogenic nematode species have tremendous potential for biological control of the insect pest. The free living non-feeding infective juvenile seek out a host, penetrate into its body cavity, recover from their development arrestment, release a symbiotic bacterium and bacteria and nematode cooperate to overcome the host immune response and kill the host within three days. The bacteria propagate and protect the cadaver from colonization by other micro organisms. The bacteria occurs in two forms viz., primary and secondary form.

The entomopathogenic bacteria, *Xenorhabdus nematophila* and *Photorhabdus luminescens* were isolated from infective juveniles of native entomopathogenic nematodes. The bacterial cells alone (one day old) and their cell free extract (one day old), nutrient broth (treated check) and sterile water (untreated check) were tested against all larval stages of *Helicoverpa armigera* by diet incorporation method. Bacterial cells alone and its cell free extracts were found to be lethal to *H. armigera*. No insect mortality was recorded in sterile water (untreated check) whereas nutrient broth (treated check) recorded 2.78 % mortality. A maximum of 100 % mortality was achieved when the larvae were treated with *X. nematophila* (cell free extract), and *P. luminescens* (bacterial cell alone and cell free extract) at 6 Days after inoculation. Application of cell free extract of bacteria caused significantly quicker mortality than bacteria alone. The results clearly indicated that the toxins secreted by the bacterial symbionts were insecticidal in nature. The bacteria also possessed bactericidal and fungicidal properties.