Nuclear polyhedrosis viruses from coconut blackheaded caterpillar, *Opisina arenosella* Walker and sorghum spotted stem borer, *Chilo partellus* (Swinhoe)

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ABSTRACT: **Two nuclear polyhedrons viruses from the coconut blackheaded caterpillar, *Opisina arenosella* Walker and sorghum spotted stem borer, *Chilo partellus* (Swinhoe) were isolated and reported for the first time from India. The pathogenicity of both the NPVs have been tested and proved along with gross pathological symptoms.**

KEY WORDS: *Chilo partellus*, nuclear polyhedrosis virus, *Opisina arenosella*

Opisina arenosella is a major pest of coconut, often causing extensive damage in all southern states of India, especially Karnataka and Tamil Nadu. *O. arenosella* is subject to attack by several indigenous parasitoids and predators (Cock and Perera, 1987). The occurrence of diseased larvae with the symptoms characteristic of nuclear polyhedrosis virus infection was noticed among field population of *O. arenosella* on coconut leaves collected from a farmer's field in Mandya.

Sorghum is an important grain and fodder crop of India. Among the stem borer species associated with sorghum in India, the spotted stem borer, *Chilo partellus i*s the major pest. Incidence of stem borer ranges from 10-75 per cent with severe infestation that can necessitate resowing of the crop (Pradhan and Prasad, 1955). The occurrence of diseased larvae with the symptoms characteristic of nuclear polyhedrosis virus infection was noticed among field population of *C. partellus* on fodder maize at National Dairy Research Institute, Bangalore.

Smears of diseased larvae examined under phase contrast microscope revealed the polyhedra in the nuclei of fat body cells and tracheal matrix. The polyhedra were collected and purified from the diseased caterpillars by differential centrifugation method. Studies on the pathogenicity of the virus were conducted with ten and fifteen second instar larvae of *O. arenosella* and *C. partellus* inoculated at the rate of $1x10^5$ POBs/larva through leaf surface contamination technique and it resulted in 100 per cent mortality within 3-5 and 6-8 days, respectively days. The polyhedra from the inoculated and diseased caterpillars were harvested, compared and checked with original isolates through electron microscope and found to be the same. Healthy larvae of *O. arenosella* generally green when young and turn into brown with reddish stripes dorsally, when they grow into mature larvae and consytruct

galleries in the leaves. In contrast, the diseased larvae are pinkish white and do not construct galleries. In the advance stages of infection, cuticle became very fragile and ruptured at the slightest pressure liberating the liquefied body contents containing polyhedral occlusion bodies. Though the occurrence of NPV has been reported earlier by Philip *et al.* (1982) from Kerala; no pathogenicity testing of NPV in *O. arenosella* has been proven. The diseased larvae of *C. partellus* are white in colour compared to brown colour in healthy larvae.

The NPV of *C. partellus* has not been included in the catalogue on viral disease of insects (Martignoni and Iwai, 1986). Though the prevalence of nuclear polyhedrosis virus has been reported from Kenya (Odindo *et al.*, 1989), there seems to be no authentic report on the pathogenicity testing earlier.

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