

A DENSOVIRUS OF *CASPHALIA EXTRANEA* (LEPIDOPTERA : LIMACODIDAE) :  
CHARACTERIZATION AND USE FOR BIOLOGICAL CONTROL

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Outbreaks of the moth *Casphalia extranea* (Limacodidae) occur periodically during the months of August and September in oil-palm and coconut plantations of Ivory Coast causing great damages. One of the main natural control agents of this pest is a small icosahedral non-enveloped virus of 22 nm in diameter. This virus has been purified and partially characterized.

Purified virus suspension have a UV absorbance spectrum typical of a nucleoprotein with an average 260/280 extinction ratio of 1.50, a buoyant density in CsCl of 1.38 and give positive dephenylamine but negative orcinol reactions showing that the virus contains DNA. The viral genome is a single stranded linear molecule averaging 2.04  $\mu$ m in length corresponding to a mol. wt. of 1.93 Mdaltons. Four proteins are found in purified virus particles with average mol. wts. of 82,000 (VP<sub>1</sub>), 74,000 (VP<sub>2</sub>), 54,000 (VP<sub>3</sub>) and 49,000 (VP<sub>4</sub>) accounting for 8 %, 27 %, 6 %, and 59% respectively. By its biophysical and biochemical properties, this virus is considered to belong to the genus Densovirus (Parvoviridae).

Preliminary field experiments have shown that when this virus is spread in plantations it is able to control the pest satisfactorily. An aerial treatment by helicopter was made during an outbreak of *C. extranea* which occurred in August 1985 in a block of 80 ha of the oil palm plantation of Palminindustrie at Eloka. This block was subdivided into 3 blocks of 10 ha each (A, B, C) and one of 50 ha (D). A crude virus suspension was prepared by homogenizing infected larvae in 0.05 M Tris-Buffer, pH 7.8 containing 0.5% S.D.S. (TB). The extract filtered through cheese-cloth was centrifuged at 8000 g for 10 minutes. The supernatant was kept and the pellets re-extracted twice after sonication in the same volume of TB. This suspension was used to treat blocks A and B at doses equivalent to 50 and 100 virus-dead caterpillars per ha respectively. Block C was left untreated and block D was treated with the insecticide Deltamethrine at a dosage of 9 gr per ha.

Two weeks after the treatment, the epizootic had caused the death of 92 % of the larvae on the treated fields A and B. Block C adjacent to blocks A and B was invaded by the virus causing a gradual decline of the insect population over two weeks. The effect of Deltamethrine was almost instantaneous, killing over 99 % of the larvae in five days. However, the high cost of the treatment with the chemical insecticide and its inconveniences should be considered while comparing the different results.

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