

PATHOGENICITY OF TWO NUCLEOPOLYHEDROVIRUS PRODUCTS, VIRIN NSH AND GYPCHEK, FOR ASIAN AND NORTH AMERICAN GYPSY MOTH LARVAE

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ABSTRACT

Periodic intrusions of Asian strains of gypsy moth, *Lymantria dispar* L., into North America have occurred over the past several years. Preventative measures in the countries of origin and around ports of entry in North America have lowered the risk of invasion and establishment but the threat remains current. Asian strains have a wider host range than the established North American (European) strain and, unlike North American female moths, Asian females fly. Thus, if an Asian strain were to become established in North America its management would be costly and the potential for damage to forested ecosystems would be great. The gypsy moth nucleopolyhedrovirus (LdNPV) product Gypchek is the only gypsy moth-specific pesticide available for mitigating damage caused by moderate to dense larval populations of the pest. A similar product, Virin NSh, is available in Russia. In the United States Gypchek would be the pesticide of choice for use on environmentally sensitive lands infested by an Asian strain: broad-spectrum pesticide treatments on such lands would be inappropriate. The effective use of Gypchek against these infestations will come through an understanding of LdNPV epizootiology in Asian strain habitats, and, the establishment of Gypchek field doses for use against these strains. As an initial step in establishing field doses we conducted bioassays

of both Gypchek and Virin NSh against North American (New Jersey-laboratory) and Asian (Western Siberian-wild) second instar gypsy moth larvae. Diet incorporation assays of both products were conducted in Hamden and birch-foilage assays were conducted in Novosibirsk. Probit analysis of the diet incorporation assay indicated that Gypchek [$LC_{50} = 2.52 \times 10^4$ viral occlusion bodies (OBs)/ml diet] was slightly more active than Virin NSh [$LC_{50} = 5.16 \times 10^4$ OBs/ml diet]. However, parallel regression lines and overlapping of 95 percent confidence limits indicated that the two products were of similar potency. In the assay on birch foliage, larvae were almost identical in their response to the two products, though higher levels of virus were required to elicit an LC_{50} : Gypchek = 1.31×10^6 OBs/0.25 m² foliage and Virin NSh = 1.20×10^6 OBs/0.25 m². The slopes of the regressions were nearly identical and were parallel. Comparisons of the results of the two bioassays, though tempting, may be misleading owing to differences in assay protocols. Nevertheless, it is highly probable that both products contain the same virus and will be equally effective when tested against a given strain of gypsy moth. Whether or not Asian strains of gypsy moth are more or less susceptible to Gypchek will be the focus of future studies.