RELATIVE POTENCIES OF GYPSY MOTH NUCLEOPOLYHEDROVIRUS GENOTYPES ISOLATED FROM GYPCHEK

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ABSTRACT

Gypchek is a gypsy moth (*Lymantria dispar* L.) - specific biopesticide whose primary use is for treating areas where environmental concerns outweigh the use of broad-spectrum pesticides for gypsy moth management. Gypchek is a lyophilized powder produced from larvae that have been infected with the gypsy moth nucleopolyhedrovirus (LdMNPV). The product contains a mixture of closely related LdMNPV genotypes that, in combination, act as the active ingredient. The genotypes vary in quantity and quality (virulence) and account for the variability in viral occlusion body (OBs) yield from one in vivo Gypchek lot to the next. Which genotypes account for most of the *in vivo* replication is indeterminable. We continue to search for and test virulent strains of LdMNPV amenable both for large-scale in vitro (cell culture) production and for the development of a "single" genotype or a "cocktail" of genotypes, from which OB yield can be maximized and viral activity "standardized" from one in vivo production lot to the next. Plaque-purified viral genotypes (122b, 122hp, 203, B1B, and MPV) were isolated from Gypchek powder and propogated in fourth stage gypsy moth larvae. In bioassays, second stage gypsy moth larvae from a standard New Jersey colonized strain were challenged with a range of doses of Gypchek , 122b, 122hp, 203, B1B, and MPV OBs, incorporated into artifical diet. Probit analysis (PoloPlus, 2.0, LeOra Software) was used to determine and compare Lethal Concentration (LC) values from the larval mortality data.

Based upon calculated 95-percent confidence limits, both 122hp (LC50=1568 OBs) and 122b (LC50=2128 OBs) were equally potent and more active against the laboratory strain of gypsy moth than either Gypchek (LC50=6896 OBs) or any of the other genotypes tested: 203 (LC50=7414 OBs), MPV (LC50=13113 OBs), B1B (LC50=18079 OBs). Differences in potencies were supported by tests for parallelism and equality of slopes of the regressions. From that data, it appeared that 122b and 122hp were about three times as potent as Gypchek. Further laboratory studies are indicated to confirm the differences in potency over several in vivo and in vitro passages. If and when these elevated potencies are confirmed, field experiments to demonstrate efficacy of these genotypes as products formulated from either in vivo or in vitro productions will be designed and executed.