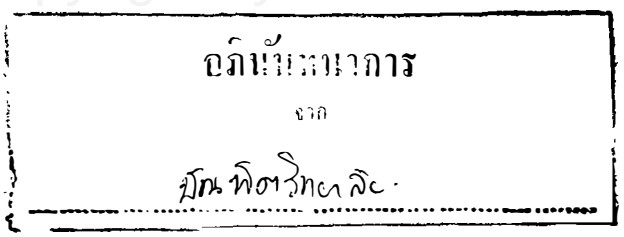
SEARCH FOR NEW BACTERIOPHAGES AND IMPROVED BACTERIOPHAGE TYPING FOR THE IDENTIFICATION OF BACILLUS THURINGIENSIS STRAINS

By

CHARIYA KRAILERT

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF SCIENCE
(MICROBIOLOGY)

IN THE
FACULTY OF GRADUATE STUDIES
OF
MAHIDOL UNIVERSITY
1983



SUMMARY

This study was aimed at searching for new phages and improved phage typing for the identification of B. thuringiensis strains. Three new phage isolates specific to B. thuringiensis strains were recovered in Thailand. Results from the study on the structural morphology using electron microscopy, antigenic relationship, host range and physical properties of virions, suggest that they are different strains of bacteriophge.

The phage isolates are not affected by chloroform. The phage No.II quite sensitive to both 25°C and 4°C and also phage isolate No.III is more sensitive to high temperature than low temperature. Whereas, both of phage isolate No.I and phage morII are relatively stable at those two temperature condition. The phage sensitivity patterns of B. thuringiensis strains to these phage isolates and one additional reference phage strain of B. thuringiensis, phage morII, demonstrated that phage typing could probably serve as an alternative method for the identification of the closely related strains in individual serotypes (H-4ab(sotto and dendrolimus), H-8ab, H-8ac, H-10a, H-10ab, H-11ab,H-11ac) that could not be distinguished by serological typing. In addition, bacteriophage typing will be very useful in identifying those strains of B. thuringiensis which do not have flagella.

Results obtained in this study together with evidence demonstrated by others suggested that the possibility of using phage typing as a taxonomic tool for B. thuringiensis strains was quite promising in addition to serological typing. Nonetheless, more research works are needed to be done in order to search for more phages specific to B. thuringiensis strains.