

INFORMATION ON NEW CONCLUSIONS OF DOCTORAL THESIS

Thesis title: Preparation and use of some natural synergists based on vegetable oil to enhance biological activity of *Bacillus thuringiensis* and Imidacloprid insecticides

Specialization: Organic Chemistry

Code No.: 62.44.01.14

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Summary of new contributions of the thesis:

1. Have a systematic study of likely synergists for microbial insecticide *Bacillus thuringiensis* var. *Kurstaki* and brown plant hopper Imidacloprid insecticide. Results showed that synergists, which are the potassium salt mixture of unsaturated oleic acid and linoleic acid at a rate of potassium oleate / potassium linoleate approximately 54 / 43 (% kl), are suitable for Bt on *Plutellaxylostella* on Cruciferae vegetables. The synergist which is suitable for imidacloprid on brown plant hoppers (*Nilaparvatalugens*Stal.) is methyl oleate.

2. Study the use of enzymes to extract oil from *Camellia* and peach seed kernels. The research has contributed to reduce the amount of toxic solvents by using enzymes to break cell wall, thus oil is extracted more easily.

3. Use ionic liquid catalyst $\text{minC}_4\text{H}_8\text{SO}_3\text{H}\cdot\text{CH}_3\text{SO}_3$ to perform cross esterification of *Camellia* oil into methyl ester of fatty acid. This is a new research using ionic liquid catalyst for cross-esterification of triglyceride. The process of separation and purification is simpler.

4. Study the acting mechanism of synergists on enzymes in body of insects. The results showed that the new Bt insecticide (mixture of Bt and synergist) has effect to inhibit detoxification enzyme Aminopeptidases N within *Plutellaxylostella*. New hopper insecticide (imidacloprid + synergists) has effect on detoxification enzyme Glutathione S-transferase and cytochrome P450-monoxygenases within brown plant hopper (*Nilaparvatalugens*Stal.). This is the new result, which partly explains the acting mechanism, synergist metabolism methods in insects' body. Thus, this is the basis to take measures to increase biological effect of pesticides and slowdown the resistance formation process within pests' body.

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