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KEY WORD: TOXICITY/NEEM EXTRACT/CYHALOTHRIN/Apis florea/Apis cerana

CHULEEMAS BOONTHAI : TOXICITY AND RESIDUAL EFFECTS OF Azadirachta indica var. siamensis EXTRACT AND CYHALOTHRIN ON Apis florea AND Apis cerana THESIS ADVISOR : PROF. SIRIWAT WONGSIRI, Ph.D. 173 pp. ISBN 974-583-676-1.

Toxicity of Thai neem extract and cyhalothrin on Apis florea and Apis cerana were investigated by using topical application and feeding methods. The 24 h LD50 values with $p=0.05$ were evaluated and analysed by probit analysis program. The results showed that when using topical application, in A. florea the mean 24 h LD50 values for Thai neem-seed extract was 129.5 $\mu\text{g}/\text{bee}$, for neem-leaf extract was 2021.4 $\mu\text{g}/\text{bee}$, for neem oil was 325.7 $\mu\text{g}/\text{bee}$, for commercial neem extracts such as Margosan-O was 4539.9 $\mu\text{g}/\text{bee}$, for Neemix was 2099.0 $\mu\text{g}/\text{bee}$, and for Advantage was 12899.0 $\mu\text{g}/\text{bee}$. The respective values for A. cerana were 67.4, 3779.6, 380.3, 1788.4, 789.0, and 1621.0 $\mu\text{g}/\text{bee}$. The mean 24 h LD50 values of cyhalothrin on A. florea and A. cerana were 0.0003 and 0.0039 $\mu\text{g}/\text{bee}$ by using topical application and 0.0005 and 0.018 $\mu\text{g}/\text{bee}$ by using feeding methods.

Residual effects of neem-seed extract and cyhalothrin on A. florea and A. cerana were studied by spraying 1% neem-seed extract and 0.002% cyhalothrin on Antigonon leptopus plots. The residue after different times was tested on A. florea and A. cerana. The residual toxicity of neem-seed extract on A. florea and A. cerana was less than 3 and 6 hours by using topical application and less than 1 hour by using feeding methods. Residual toxicity of cyhalothrin on A. florea and A. cerana was less than 48 and 6 hours by using topical application and less than 12 and 1 hour by using feeding methods. The repellent effect of cyhalothrin was significantly higher than that of the control group and of the neem extract ($p < 0.05$).

The effect of neem-seed extract on conditions within the beehive was studied by spraying 1% neem-seed extract every 3 days on flowers in 3m x 3m x 2m test cages each containing one A. cerana hive. The conditions within the beehives, such as the number of eggs, brood, adults, the amount of nectar and pollen collected, beehive weight, and the number of abnormal larvae /brood, were not significantly different from the control group ($p < 0.05$). However, there was a significant effect on the number of larvae at the ninth week and an absconding ($p < 0.05$).

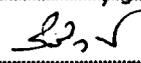
The effect of 0.1% neem-seed extract on 1 day-, 2 day-, and 3 day-old larvae of A. cerana was investigated. There was a significant effect on the percentage of abnormal larvae and larvae expelled from the hive ($p < 0.05$).

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