

Acknowledgements

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Comparison of two methods to assess effects of insecticides on hypopharyngeal gland development of honey bee

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Abstract

Hypopharyngeal glands (HPG) are the main organs responsible of royal jelly secretion. The size of the HPG is age^{2, 4} and food protein^{5, 7} dependent, and correlated to the amount of secretion², and the weight of the head⁵. Their development can be assessed with a microscope by measuring the *acini* diameter after dissection.. This very useful method^{1, 3, 5, 6} has some inconveniences: it requires dexterity to extract the gland, and the diameter of the *acini* is difficult to measure because of its pear shape. In order to assess the HPG development, total protein of the gland can be measured with the Bradford method^{7, 8, 9}, but this also requires to extract it from the head.

The development of the HPG may be also affected by substances known for their insecticide effects like soybean trypsin inhibitor^{8, 9}.

The objective of this work is to compare two methods for assessing the effects of insecticides on HPG development. The first one consists in measuring the *acini* diameter, and the second one in measuring the total protein of the head. The measurements are made on bee nurses intoxicated during 10 days with sublethal doses of dimethoate.

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V. Honey bee poisoning incidents and monitoring schemes

Review of honeybee pesticide poisoning incidents in Europe – evaluation of the hazard quotient approach for risk assessment

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Abstract

Background: Honeybee risk assessment is required in Europe for all pesticides where bees may be exposed. This is well established for sprayed products where the hazard quotient (HQ), calculated by dividing the application rate of the sprayed product active ingredient by the LD50, is less than 50 the product is considered safe to bees (unless it is an IGR). In the UK, Germany and the Netherlands post-registration monitoring schemes on the poisoning of honeybee by pesticides collate data on honeybee incidents.

Results: The incident schemes have been invaluable in identifying agronomic practices resulting in honeybee mortality and changes have been made to labelling to address such issues. The decrease in the numbers of incidents reported supports the assertion that such schemes have positively contributed to the regulatory process and also provide confidence in the risk assessment approaches.

Conclusion: This review of incidents in Europe over the last 25 years suggests that the HQ approach to risk assessment for honeybees offers an appropriate level of protection.

Keywords: honeybee, pesticide, hazard quotient, risk assessment