4.6 A method for a solitary bee (Osmia sp.) first tier acute contact and oral laboratory test: an update

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Abstract

The recently updated EFSA draft honeybee Guidance document also specifies other hymenopteran pollinators, like solitary bees and bumblebees, as groups to take into consideration when assessing the risk of plant protection products to pollinators. However, no validated test protocol and consequently no extensive data set is available to compare sensitivities of other relevant pollinators to those of honeybees. Within the current project of the ICPPR Non-Apis working group a start was made to develop a first-tier acute contact and oral test for *Osmia* spp. bees.

Based on the honeybee guideline OECD214 and Ladurner et al. (2005) a contact test was designed using dimethoate as test substance, *Osmia bicornis*, *Osmia cornuta* were housed in groups and feed either with a wick-action or open device or a flower petal attractant. First results indicate that reproducible results were obtained using the open and wick-action devices. In these tests, control mortality was never higher than 13 percent. Furthermore, sensitivities of *O. cornuta* and *O. bicornis* appeared to be rather similar with $LD_{50\text{-}96h}$ values ranging from 0.8-1.3 and 0.4-2.3 µg a.s./bee for *O. cornuta* and *O. bicornis*, respectively. Indicating that a validated and workable test guideline is within reach.

Based on the honeybee guideline OECD 213 and the newly developed guideline for bumblebee testing an acute oral test was designed using dimethoate and ring tested in 2017. The first results will be presented during the ICPPR meeting in Valencia.

4.7 Oral toxicity test with solitary bees: Experiences on the acute feeding test

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Introduction

The request for Bumble bee and Solitary bee species in toxicity testing has dramatically increased during the last years due to a growing awareness that results on honey bees may not be completely transferable to other pollinator species. This creates a need for further testing of non-Apis species to cover the risk of exposure of pollinators to plant protection products.

In principle, lower tier oral and contact toxicity tests are designed comparable to the established honey bee acute toxicity tests (OECD 213 & 214, EPPO 170, OCSPP 850.3020), but differ with respect to the biology of the test species (e.g. group vs. individual feeding, light conditions, mode of food presentation).

Oral toxicity tests with the solitary bee species *Osmia bicornis* are tricky, since simple feeding containers are not readily accepted by the bees and a reliable consumption can be very difficult. Therefore, we tested different factors that could influence the consumption of sugar solution.

Material & Methods

Female *Osmia bicornis* not older than 5 days were used for the test. The conditions during the test period were 22±2 °C, a relative humidity of 60±5 % and a 16 hours light/ 8 hours dark cycle. The test unit was a plastic box with a perforated lid for ventilation and the dimensions 18x13.5x12 cm.

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History ICPPR-Bee Protection Group conferences
1st Symposium, Wageningen, the Netherlands, 1980
2nd Symposium, Hohenheim, Germany, 1982
3rd Symposium, Harpenden, UK, 1985
4th Symposium, Řež, Czech Republic, 1990
5th Symposium, Wageningen, the Netherlands, 1993
6th Symposium, Braunschweig, Germany, 1996
7th Symposium, Avignon, France, 1999
8th Symposium, Bologna, Italy, 2002
9th Symposium, York, UK, 2005
10th Symposium, Bucharest, Romania, 2008
11th Symposium, Wageningen, the Netherlands, 2011
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Group photo of all symposium participants, standing in front, from left:
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Job & Margreet van Praagh with award,
Anne Alix (secretary of the board)

Foto
Pieter A. Oomen (Bumble bee *Bombus lapidarius* on thistle)

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