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1: Pest Manag Sci. 2003 Mar;59(3):269-78.

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Learning performances of honeybees (Apis mellifera L) are differentially affected by imidacloprid according to the season.

Decourtye A, **Lacassie E**, **Pham-Delègue MH**.

Laboratoire de Neurobiologie Comparée des Invertébrés, INRA, BP 23, La Guyonnerie, F-91440 Bures-sur-Yvette, France.

To establish the sublethal concentrations domain, acute and chronic oral tests were conducted on caged honeybee workers (Apis mellifera L) using imidacloprid and a metabolite, 5-OH-imidacloprid, under laboratory conditions. The latter showed a 48-h oral LD50 value (153 ng per bee) five times higher than that of imidacloprid (30 ng per bee). Chronic feeding tests indicated that the lowest observed effect concentrations (LOEC) of imidacloprid and of 5-OH-imidacloprid on mortality of winter bees were 24 and 120 microg kg(-1) respectively. Behavioural effects of imidacloprid and 5-OH-imidacloprid were studied using the olfactory conditioning of proboscis extension response at two periods of the year. Winter bees surviving chronic treatment with imidacloprid and 5-OH-imidacloprid had reduced learning performances. The LOEC of imidacloprid was lower in summer bees (12 microg kg(-1)) than in winter bees (48 microg kg(-1)), which points to a greater sensitivity of honeybees behaviour in summer bees, compared to winter bees.

PMID: 12639043 [PubMed - indexed for MEDLINE]

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Contrasting effects of imidacloprid on habituation in 7- and 8-day-old honeybees (Apis mellifera). [Neurobiol Learn Mem. 2001]

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