



Behavioral change induced by pesticide may prevent workers from intoxication

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Communication of eusocial bees is sophisticated and essential for colony functioning. Its function may help workers to recognize relatives, defend the colony, and promote foraging and collection of resources, such as pollen and nectar. Communication mechanisms include, the use of pheromones, appendages, such as wing beating, and antennation. Through active antennation workers can discriminate between nestmates and non-nestmates and are thus able to reject non-related individuals. Through transversal alimentary behavior (trophallaxis) the eusocial Hymenoptera can also increase fluid intake with conspecifics which enhances social immunization, at the colony level. Stressors, however, such as pesticides have been reported to negatively affect bees by hampering the development of common activities or even reducing colony survival. Pesticides, especially neonicotinoids, are effective in killing a wide range of insects, including bees, because of their antagonistic interaction with the nicotinic acetylcholine receptors in insect brains. The effect of neonicotinoids on honey bees has been highly studied, especially in Europe and in the USA, still little is known about the effect of these pesticides on stingless bees, a major group of pollinators distributed across the Pantropical zone. Therefore, studying the effect of pesticides in native bees is timely, especially because the use of pesticides in Brazil is steadily increasing. Here, we tested in the laboratory, the effect of different doses of a pesticide (Acetamiprid+ Pyrethroid) on bee survival and we tested the effect of a sub-lethal dose on antennation and trophallaxis exchange between workers of the eusocial stingless bee, *Melipona quadrifasciata* (Apidae: Meliponini). We found that the recommended dosage for in-field use results in a drastic change in bee behavior, reducing significantly the communication and social interactions of these bees.