



Dufour's gland compounds of *Polybia occidentalis* wasps change with hormone treatment modifying workers' behavior

Author(s): Amanda Prato da Silva, Amanda Prato da Silva, Rafael Carvalho da Silva, Sidnei Mateus, Fabio Santos do Nascimento

Institution(s): Programa de Pós Graduação em Entomologia, Departamento de Biologia, Universidade de São Paulo (USP), Ribeirão Preto, Brasil ; Programa de Pós Graduação em Entomologia, Departamento de Biologia, Universidade de São Paulo (USP), Ribeirão Preto, Brasil

Social insect colonies show a self-organized system in which each individual performs different tasks. Thus, this complex organization has an efficient system coordinating individuals within the colony. Chemical communication is recognized as fundamental for to mediate organization of labor. The compounds produced by exocrine glands are released to the environment, and are detected by other individuals that respond in a specific way. We analyzed the secretion of Dufour's gland of *Polybia occidentalis* workers to test if the compounds varied according to the individual function. To do this, we collected entire colonies and selected combs with pupae that were kept in the laboratory until the emergence of individuals. Newly-emerged workers were treated with methoprene hormone (analogue to juvenile hormone), acetone and without treatment. Later, these individuals were inserted in natural colonies and their tasks observed. Along the experiments, individuals were collected and gland secretions were analyzed in the GC-MS. Our preliminary results showed that compounds of workers changed according to the different tasks, cell inspection, building and foraging. However, between building and foraging' functions did not have differences chemically. Regarding the treatments, secretion of glands had differences between cell inspection and building tasks (without treatment x methoprene ($p=0,0002$) and acetone x methoprene ($p=0,0032$)) but did not have differences between without treatment x acetone. Wasps performing foraging had differences in their compound composition in all the treatments. Concluding, Dufour's gland compounds change according to the tasks performed by individuals, an indication that these compounds play a role in intercommunication within the nest. Furthermore, methoprene supplementation (analogue to juvenile hormone) change chemical profile of workers performing distinct tasks, influencing the ontogeny of social life.