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CHEMOANEMOTAXIC RESPONSES TO SELECTED ODORANTS BY HOUSE CRICKETS

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The olfactory system of insects is a prominent model in neuroscience that allows us to address how insects detect, encode, and process olfactory stimuli. Stimulation of olfactory receptors may allow insects to detect and identify food, mating partners, and avoidance of predators. These receptors are located in cuticular sensory organs (sensilla) found on their long, paired, multi-segmented antennae. The cuticle of these sensilla is pierced by numerous small pores with underlying olfactory receptor cells, responsible for detecting odorants. Here, we studied the olfactory capability of the house cricket, Acheta *domesticus*, an omnivorous scavenger from the Gryllidae family. These insects use their antennae to detect chemosensory (smell and taste), mechanosensory (touch), and possibly thermo-hygrosensory (temperature and humidity) information.

The overall aim of this study was to determine if food samples, deemed biologically-relevant from the habitat of the crickets (e.g., fruits, vegetables, proteins), elicited anemotaxis (movement in response to odor) and acted as food lures. We tested fruit samples including, blueberries, strawberries, oranges, apples, red grapes, and bananas. Vegetable samples included, tomatoes, carrots, cauliflower, broccoli, onion, green beans, and green peppers. Sources of protein included, various flavors of cat food (e.g., poultry and fish).

We hypothesized that some of the food samples tested would elicit significant anemotaxis. Some of food samples that were tested showed significant results. Some of these samples could serve as possible lures, as house crickets are pests and can contaminate foods with their feces. This raises concerns about foodborne illnesses associated with microbial pathogens and creates health concerns, especially in developing countries.

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