

FORAGING ACTIVITY OF *MONOMORIUM ORIENTALE* (HYMENOPTERA: FORMICIDAE) UNDER VARIOUS LABORATORY CONDITIONS

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Abstract The *Monomorium orientale* is a common pest ant species found infesting human structures. Although it is of relatively lower significance when compared with some other more predominant ant pests, its minute size makes invading human foodstuffs almost too effortless and thus, it is deemed a pesky nuisance that needs to be addressed. Before we could proceed to seek ways to manage and control the infestation of this pest in homes, it is essential to explore its feeding behaviour, which includes the foraging aspects. In order to gain more in-depth understanding of this area, a laboratory study on its foraging activity and foraging population was conducted. Our study focused on how different colony conditions and different food sources would influence its daily foraging rhythm as well as the population of foragers. By simulating the daily cycle of light and dark over a 72-hour period, we were able to observe certain foraging trends. Experimental colonies with the three different colony conditions were established; normal colony (balanced caste composition), queen colony (brood absent) and immature colony (queen absent). Every condition was replicated 10 times. Three food types from the three main food classes; 40% sucrose solution (w/w) (carbohydrate), freshly-mashed canned tuna (protein) and olive oil (lipid) were used. The colonies were subjected to 12:12 daily photoperiod. For the 12 hours daylight, the experimental colonies were exposed to normal lighting in the laboratory. For the 12 hours night time, the colonies were kept in black boxes with red light (4W lamps). Half-hourly shots of the number of ants that foraged and fed on the food were recorded using a video camera (Geovision™ – 600 Multicam System, GV-Series System Software) for 72 hours for each replicate. For the foraging population studies, a similar experimental setup was used but half-hourly shots of the number of ants that foraged for food (within an area of 25.0 cm x 21.0 cm) were recorded for a total of 72 hours each replicate. Results revealed that colonies under the normal condition (with a balanced caste composition) had an obvious circadian rhythm with peak activity recorded between 12 to 4 am. However, the queen and immature colonies did not produce any particular trends of foraging activity. As for the foraging population study, we discovered that the different food sources provided did not have any effects on the normal colonies. The queen-heavy colonies and brood-heavy colonies however, respectively showed higher foraging populations for carbohydrate and lipid foods (Two-Way ANOVA, Tukey's HSD, SPSS 11.0 Windows).