

Effects of starvation period on the locomotory response of *Rhyzopertha dominica* (F.)

Duong T. Nguyen

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Abstract

In the context of the development a behavioural bioassay, the effects of one to five days starvation on the locomotory responses of *Rhyzopertha dominica* were investigated. Movements in an experimental arena with airflow were videoed and analysed using computerised tracking and motion analysis software. Beetle velocity and angular velocity (turning) were influenced adversely following three or four days of starvation, resulting in a lower number of beetles arriving at food. The highest number of beetles arriving at food was obtained when they were starved for one day. Gender had a statistically significant effect on velocity; on average males walked 37% faster than females and there were significant decreases in the velocity of females from the fourth day and male velocity from the fifth day of starvation. Starvation significantly reduced angular velocity of beetles although the effect of gender was not statistically significant. There was a decline in angular velocity following the first day of starvation although the negative effect of starvation on turning is not as clear cut as on velocity, with a more gradual decline with increasing starvation. For undertaking behavioural bioassays with *R. dominica*, starvation beyond one day is unlikely to improve responsiveness.

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