MATING CHOICE ARE IMPORTANT FOR FEMALES OF THE PREDATOR *PODISUS NIGRISPINUS* (HETEROPTERA: PENTATOMIDAE)

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INTRODUÇÃO

Studies on the biology and developing effective mass rearing methodologies for predatory Pentatomidae are important because they are biological control agents (Tipping *et al.,* ., 1999) making it useful to (Zanuncio *et al.,* ., 2001). The predator *Podisus nigrispinus* (Dallas, 1851) (Heteroptera: Pentatomidae), common in the Americas, has been recorded in several agro - ecosystems in Brazil. It can control defoliating caterpillars and other insects, either naturally or when released to control defoliating caterpillars of *Eucalyptus* spp. (Torres & Zanuncio, 2001). Mating choice and multiple copulations can maximize the offspring (Ridley, 1990). This behaviour may increase genetic gain, sperm count and nutritional material for females (Reynolds, 1996). On the other hand, this last factor may present disadvantages as: 1) higher energy expenditure, time searching for a male and chances of predation (Crudgington & Siva - Jothy, 2000); 2) contamination by pathogens (Rolff & Siva - Jothy, 2002) and 3) toxic effects of substances transferred through genetic material (Chapman *et al.,* ., 1995) but the consequences of multiple mating and mating choice remain unclear.

OBJETIVOS

The objective of this study was to evaluate male preference and its consequences for females of the predatory stinkbug, *P. nigrispinus*.

MATERIAL E MÉTODOS

The experiment was conducted at the Laboratory of Biological Control, Department of Animal Biology, Federal University of Viçosa (UFV) in Viçosa, Minas Gerais State, Brazil in a climate chamber maintained at 28 ± 1°C, 70 ± 10% R.H. and a photophase of 12 hours. Newly emerged adult females of *P. nigrispinus* were transferred to plastic containers (500 mL) and fed every two days with two pupae of *T. molitor*. Treatments were established with or without chance of males. In the presence of males, each female was placed with either a kin male (brother), a non - kin male, or one of each. Kin males were marked on the back (scutellum) with water - based ink. In the no - choice tests, females were kept in containers with either a single kin or a single non - kin male. In the choice test, each female was kept in the presence of both a kin and a non - kin male. Ten replications were performed per treatment. The number of copulations, eggs and egg masses was recorded every 12 hours from the time the adults were placed into the containers. The eggs laid were removed from

the plastic containers with cotton tips and transferred to Petri dishes (9.5 x 1.5 cm) containing cotton wool moistened to prevent dehydration. Egg viability was evaluated for the first 10 days after each oviposition. The longevity of females copulating with kin, non - kin or both males was recorded, and after death each adult was measured with a digital caliper and weighed on an analytical balance.

RESULTADOS

The number of copulations per female was similar when mated with kin (brothers) or non - kin males. Females with the chance to choose between kin or non - kin males showed no preference and mated with kin and non - kin 3.3 times (standard error = ± 1.36) and 1.7 times (standard error = ± 0.73) on average, respectively (Chi - square = 2.0; p ¿ 0.05). The oviposition period was shorter for females that mated with non - kin males or not at all (6 - 7 days) compared with those that copulated with kin or non - kin (16 - 16.5 days). Females of *P. nigrispinus* did not discriminate between kin and non - kin males in the laboratory. This could be due to various mechanisms involved in mate choice, such as territorial effects, genital morphology or the size of anatomical structures related to courtship behavior, any of which may be associated with mating success (Clutton - Brock, 2007; Shuker, 2010). The number of eggs laid per female was higher when mating with non - kin males (mean 246) than with kin or both. However, the numbers of eggs/egg mass and egg masses did not vary between females that mated with kin, non - kin or both males. The number of nymphs produced per female was higher when mated with non - kin males, followed by kin or both. The choice of sexual partner did not affect the longevity of females. The number of copulations did not correlate either with the numbers of eggs, nymphs or female longevity for those mated either with kin, non - kin or both males. However, the number of eggs per female mating with kin males was positively correlated with the number of times they mated (R = 0.8143; p = 0.01). Sexual conflict over the post - mating interests of males and females is virtually ubiquitous and stems from competition between males over the fertilization of eggs (Stockley, 1997). Females of *P. nigrispinus* mated to non - kin lay a greater number of eggs with higher viability than those laid in other circumstances. The higher number and viability of eggs laid by females copulated with non - kin males indicate that this predator can avoid genetic inbreeding by mating with unrelated males. The damage caused to offspring by mating with kin is well known in other insects.

CONCLUSÃO

Females of *P. nigrispinus* did not discriminate between kin or non - kin males when choosing mates, which can lead to genetic inbreeding and decreasing efficiency of this predator in biological control programs.

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