

## **Preference of male opossums (*Monodelphis domestica*) when given the choice between a sexually experienced and inexperienced female**

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Studies of chemical communication in the gray short-tail opossum (*Monodelphis domestica*), a small (100-gram), Brazilian marsupial, have focused on female behavior with reference to male pheromonal induction of estrus. Less is known of males, particularly as it relates to partner preference and precopulatory olfactory behavior. Objective of this study was to compare olfactory behavior of sexually experienced and naïve males in the presence of both a sexually experienced female (had given birth) and a naïve female who no prior exposure to males or their scent marks. Observations were recorded of opossum interacting in a partner preference arena consisting of 3 standard rat cages, set side by side and connected with 2 plastic mesh “baskets” (12x12x15 cm) through which the males could interact with the females. Each of 18 males (9 experienced, 9 inexperienced) were placed, one at a time, in randomized sequence to the central chamber of the arena. After a 5-minute acclimation period, doors were opened to the baskets, exposing males to visual, auditory, and olfactory stimuli from the 2 females in the side compartments. The study was conducted in 3 experiments wherein males were exposed to females when: I) both were anestrous, II) the inexperienced female was in estrus (sexually receptive) and the experienced female was in anestrous, and III) the experienced female was in estrus and the inexperienced female in anestrous. The frequency or duration of the following behaviors were recorded during a 10-minute observation period for each male: 1) which female’s basket the male chose to visit first in the trial run; 2) time (seconds) each male spent with at least 3 legs in female’s basket; 3) the number of times the male nuzzled the basket; 4) the number of times the male scent marked each basket, and 5) whether or not the male vocalized during the 10-minute trial. Whether the females were near (within 3 cm) their basket or far from their basket for each of the 10 minutes of observation. Differences in time were tested with a t-test and differences in counts of behaviors were tested by chi squared analysis. Both the experienced and naïve males showed preference for the experienced female in experiment I, when both females were in anestrous. The experienced males scent marked more often and spent more time ( $P < 0.05$ ) in the basket of the experienced female and both groups of males nuzzled the basket of the experienced female more than the basket of the naïve female. The males did not respond as expected when the naïve female was in estrus. Male time in the baskets of the 2 females did not differ, and males nuzzled the basket of the anestrous, experienced female more than that of the estrous female, although inexperienced males did scent mark more ( $P < 0.05$ ) on the basket of the estrous female. Males showed the expected preference for the experienced female when she was in estrus (Experiment III). Time for the experienced males in the basket of the estrous female showed trend longer ( $P < 0.079$ ), and, with both groups of males, nuzzling frequency on the basket of the estrous female was higher than on the basket of the anestrous female. The results of this study indicate that males (experienced or inexperienced) prefer or are attracted to the odor and other cues from an experienced female as opposed to those of an inexperienced female. This preference was observed even when the inexperienced female was in estrus.