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Eating patterns in cats during extended exposure to fixed diets: implications for studies of palatability

BACKGROUND

Studies with humans and rodents have shown that repeated exposure to a monotonous diet results in a decline in preference or pleasantness of that diet[1-3]. This phenomenon is termed "sensory specific satiety" or "flavor fatigue." A recent study by AFB revealed that feline preference for a diet did not shift to a less preferred diet in spite of extended exposure. However, as total consumption over 3.5 months tended to decline, there may have been a gradual loss of "enthusiasm" due to sensory specific satiety for the preferred diet[4].

The goals of this study were to:

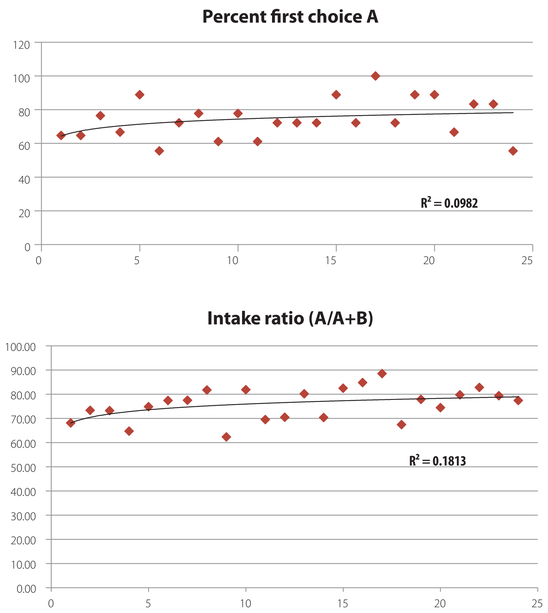
- **Replicate our initial findings** that preference was unaffected by feeding of a monotonous diet for 24 days; and
- **Evaluate short-term eating patterns** to determine whether a loss of enthusiasm may occur that would reflect sensory specific satiety prior to any change in intake.

We analyzed data from a feeding study of 20 group-housed cats fed two diets 15 hours/day for 24 days. In addition to overall intake, intake ratio (IR) and first choice, we analyzed data from the initial 1.5-hour period of rapid consumption to test for evidence of short-term sensory specific satiety. The diets differed only in flavor, with one being clearly preferred during earlier pilot tests.

KEY POINTS

Figure 1: First choice and intake ratio

Preference among the cats in the study was consistent across 24 days



- **Consistent with our prior study[4],** intake ratio and first choice were relatively stable and did not decline across the 24-day period, indicating no shift in preference over this time period (Figure 1).
- **Enthusiasm was assessed based** on grams of preferred diet (A) consumed, average intake per eating occasion and number of eating occasions within the initial 1.5-hour phase of rapid consumption, when 44% of total intake is consumed. As shown in Figure 2, there was no decline in any of these measures across the 24-day study. In contrast, an increase in intake and number of eating occasions was observed across the initial three days, perhaps reflecting a learning period of adjustment.
- **Similarly, as shown in Figure 3,** the amount of diet A consumed within the first four hours increased while intake of diet B in this period remained consistent across the 24-day period.

Figure 2: Level of enthusiasm

"Enthusiasm," assessed by grams of preferred diet (A) consumed, average intake per eating occasion and number of eating occasions within the initial 1.5-hour phase of rapid consumption, did not decline over 24 days.

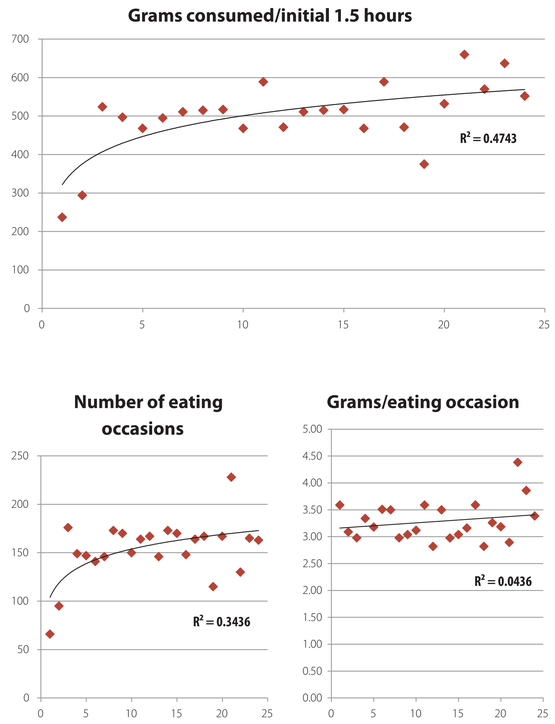
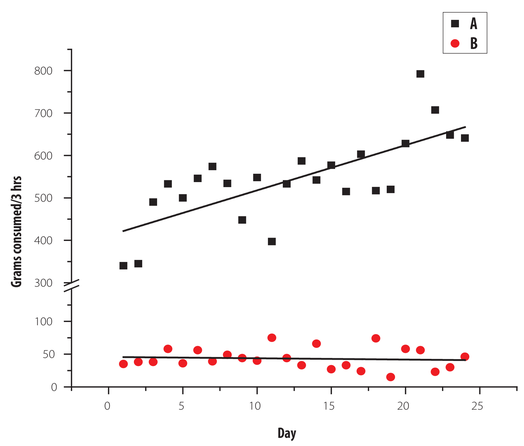


Figure 3. Total intake of diets

Over the 24-day period, total intake during the initial four hours for diet A increased (black, $r^2 = 0.626$, $p < 0.001$) while intake of the less preferred diet B remained static (red, NS).



SUMMARY

- **The persistence of intake, IR and first choice** across this 24-day study is consistent with that seen within the initial 24 days of our previous 3.5-month study[4].
- **Eating rate** within the initial 1.5- and 4-hour phases of rapid consumption did not show any evidence for diminished palatability as would be expected in the event of flavor fatigue. Similarly, there was no tendency to shift to the less preferred diet within this period.
- **These results provide additional evidence** that, in contrast to other species studied, sensory specific satiety has minimal if any effect on short-term palatability in cats. This may reflect an evolutionary adaptation to the less varied, nutritionally complete diet characteristic of an obligate carnivore. The development of sensory specific satiety is one force driving the dietary variety that omnivores require to achieve a nutritionally complete diet, while carnivores are able to meet their nutritional needs with a single food.
- **These findings indicate that,** following a brief adjustment period, the initial responses of cats to a dietary choice are highly predictive of longer-term preference and that sensory specific satiety is less likely than in other species to drive changes in preference over the short- to medium-term.

REFERENCES

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