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Preference of organic grown carrots in a rat model

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Introduction

Food preference tests represent an approach in food quality research, taking advantage of the instinctive feeding behavior of animals by allowing them to choose between food samples. A great number of investigations using laboratory rats concerning essential and/or dangerous contents are based on this method and have shown its effectiveness. The selection of food is influenced to some degree by smell and taste, but mostly by wholesomeness and need. The objective of the present study was to investigate the eventual preference among carrot-based diets of different cultivation systems in a rat model.

Materials and Methods

Carrots were grown at two consecutive years at three cultivation strategies: (C) conventional, (OA) organic using animal manure and (OB) organic using cover crops. The carrots were freeze dried and diets were prepared to contain 40% carrot and 60% laboratory rat chow.

Wistar female rats (N=30, 15 per year) weighing 230 g, were kept individually in cages, and were arranged in a block design with three blocks of 5 rats. For 5 days (Repetition 1), each rat had free access to each of the three kinds of diets (C, OA, OB), and consumption of feed from each of the diet-troughs was measured every day.

The rats were offered a commercial rat chow (Altromin) until the preference test was repeated 2 weeks later (Repetition 2).

Figure 1. Rats in individual cages with free access to each of the three diets (C, OA, OB). Each day diet-troughs' were randomly arranged within the cage.

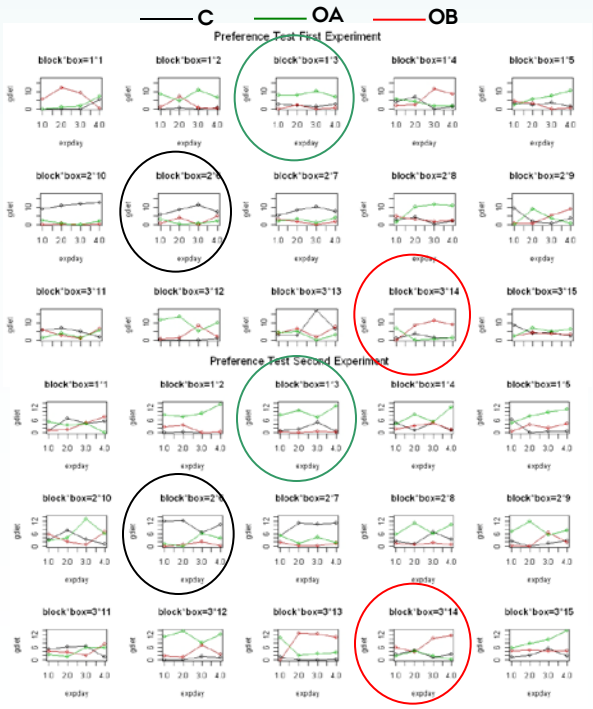

Figure 2. Results from the daily feed consumption of the three diets the rats could choose between from repetition 1 and 2 (2 week later). It is marked with circles that some rats have strong preference of the same diet.

Table 1. Relative food intake of carrot diets (Control diet =100) in the rat preference test during repetition 1 and 2 of carrots grown at two consecutive year

Year	First year 2007				Second year 2008		
Diet	C	OA	OB		C	OA	OB
Repetition 1	100	93	110		100	95	95
Repetition 2	100	94	194		100	142	110

Conclusion

The overall conclusion of the study is that rats showed individual preference for the test diets, but no clear difference among the dietary treatments could be obtained. In year 2007, rats preferred the carrot-diets of the OB-system rather than the C and OA system. However, in year 2008 no differences between cultivation systems nor fields were obtained.

References

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