## Rats show individual preference for short-term choice of three human diets

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## Introduction

Food preference tests represent a new approach in food quality research. 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.

## Objective

To test eventual selective differences among rats with regard to three iso-caloric human diets of same composition, but cultivated in three different systems.

## Materials and methods

Rats and diets
Wistar male rats ( $\mathrm{n}=27$ ) weighing 80-120 g and being 55-60 days old, were kept individually in cages, and were arranged in a block design with three blocks of 9 rats. The diets were formulated to meet the NRC requirements for rats by mixing potatoes, carrots, peas, green kale, apple, and rapeseed oil. The foods were produced by three different cultivation strategies, i.e. organic (ORG), conventional (CON), or semi-organic (ORG+) farming system
Management
The rats were kept at $22^{\circ} \mathrm{C}, 50 \% \sim 60 \%$ relative humidity and a 12 -h light/dark cycle. Rats had free access to food and water. Three feeders containing each of the three diets were placed in each cage. The reminders of the feeds were weighed daily and discarded to determine the feed consumptions. The sequences of the feeders were changed daily to avoid the effect of "position preference". Preferences expressed by daily food-intake were analyzed taking into account the correlations of the choices of a rat per experimental day, and over the course of the experiment



Figure 1 Examp Black, red and green lines indicate food intakes of ORG, ORG+, and CON, respectively.

Table 1. The composition of the experimental diets (as fed basis)


## Results

According to visual evaluation of the data it could be seen that: -Seventeen rats had significant choice on the given foods - Two, five, and ten rats preferred ORG, ORG+, CON, respectively

- Almost all individuals (except 2 rats) showed similar food choice in the two experimental periods
- Totally, rats indicated no preference among the three diets


## Implication

The overall conclusion of the study is that rats show individual preference for the test diets, and that no clear difference among the dietary treatments could be obtained.



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