

Mealworm (*Tenebrio molitor*) as a sustainable ingredient in crisps and pâtes. Sensory characterisation and consumer liking

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Conclusion

Both environmental sustainability and sensory properties were shown to be the main reasons

for the consumers when considering buying foods with added insect ingredients.

INTRODUCTION

Sustainable food production with low environmental impact has become an important matter. Insects have good nutritional value with, in general, a lesser effect on the environment than conventional animal production. Including insects as a part of our daily diet would provide a potential to increase the sustainability in the food chain.

To gain a deeper understanding of the consumers' perception of foods based on insects, different types of common food products have to be examined. For example, the products should differ in both taste and texture, as well as in the context in which they are consumed. In this study we include two widely different products, crisps and pâtes, both with same amounts of added mealworm.

The aim was to evaluate the sensory perception and the consumers' attitude and liking of these products.

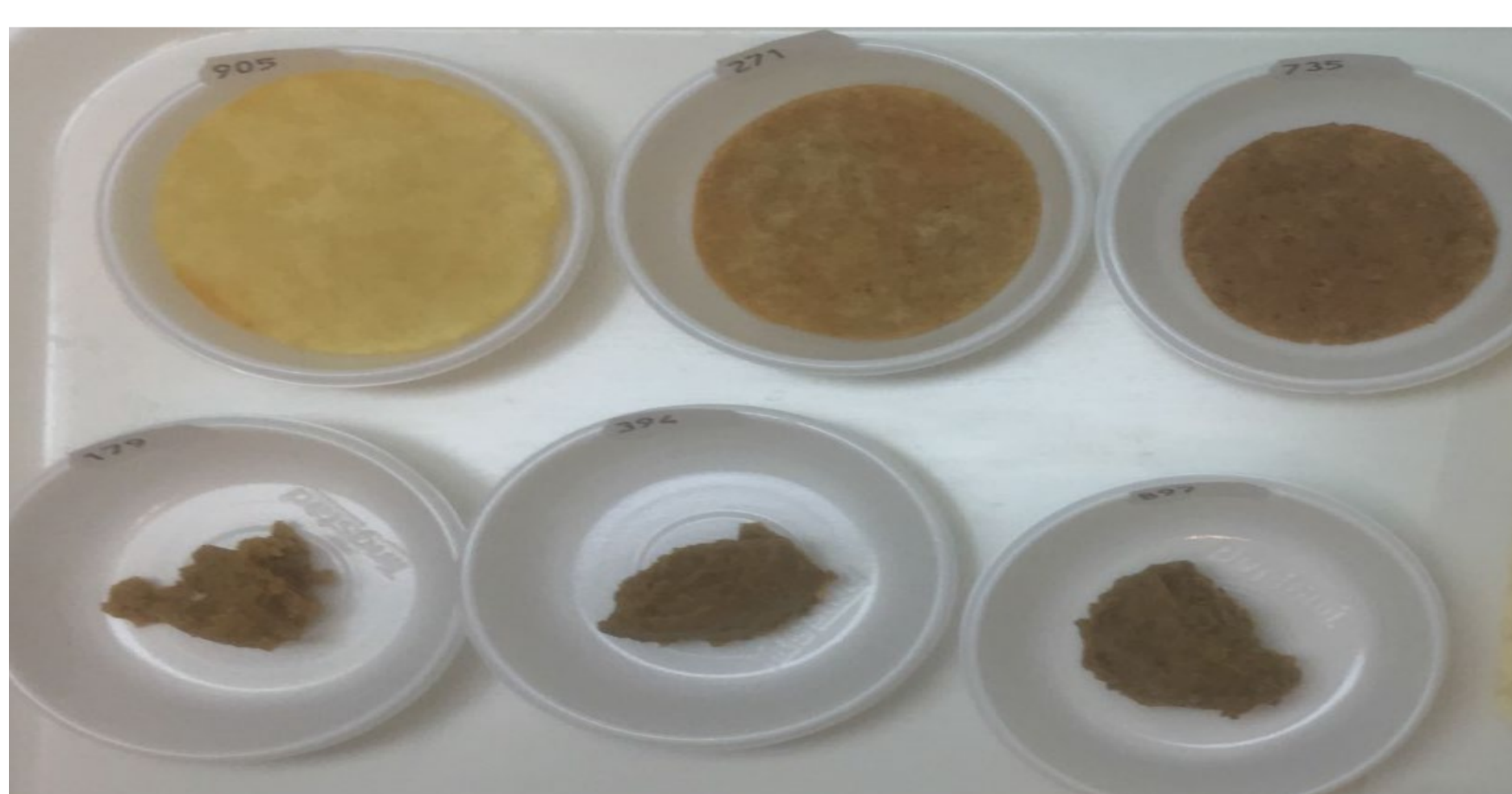


Figure 1. Crisps and pâtes with 0, 10 and 30% added mealworm ingredient.

MATERIALS AND METHODS

Three varieties of each product, crisps and pâtes, were produced, containing mealworm flour in the amounts of 0%, 10% and 30% by weight, respectively. A total of six different products were produced, fig 1.

RESULTS AND DISCUSSION

By addition of mealworm (*Tenebrio molitor* L.) to the crisps, the brittleness increased. However, an increase in mealworm also increased the darkness. Adding mealworms to pâté reduced the odour and flavour of vegetable and increased the flavour of cinnamon and pepper as well as the oily texture.

As seen in fig 2, there was no significant difference in total liking between 10 and 30% addition of mealworm, nor between 0 and 10% addition, in any of the two products. The crisps received higher liking score than the pâtes. Thus, there is a higher probability that a customer would buy insect crisps rather than insect pâté.

Sensory properties were together with environmental sustainability deemed as main reasons for buying products with added insect ingredient.

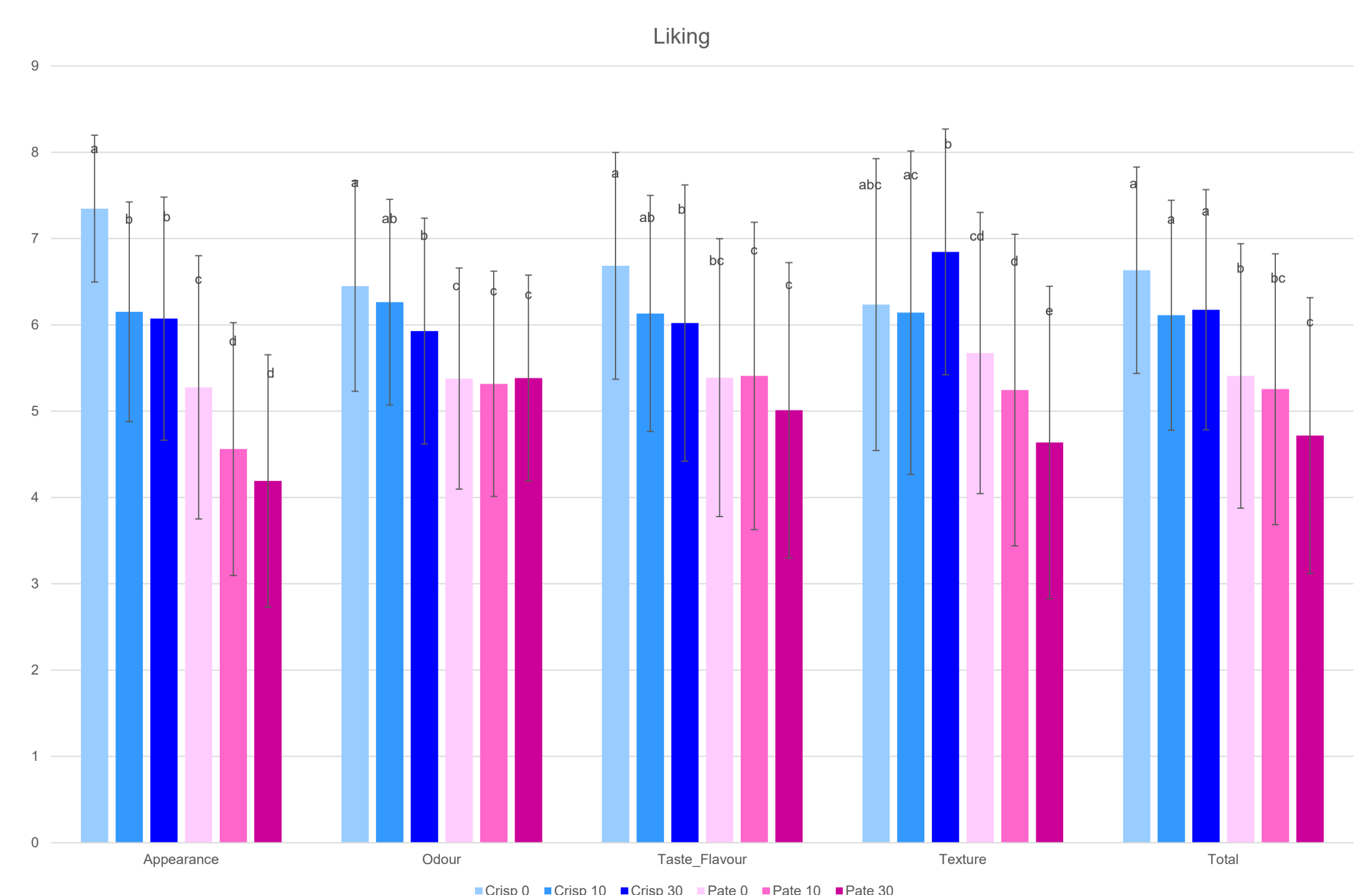


Figure 2. Degree of liking in a consumer test, for the crisp and pâté formulations. The bars show the average and standard deviation (S.D.) for each property and product composition, according to consumer evaluations. The letter(s) above each bar indicates the degree of statistical significance between bars. Thus, if two bars have different letters, this indicates that there is a significant difference between them ($p < 0.05$).



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