

Recipe Optimisation of a Cake Containing a Modified Starch with Prolonged Satiety Effects

A. Bongartz¹, M.-L. Cezanne¹, C. Hauert², C. Wehri²

¹ University of Applied Sciences Zurich (ZHAW), Institute of Food and Beverage Innovation, Switzerland ² iNNutrigel AG, Switzerland

Initial position

Obesity is a global problem. Various action-plans from public health institutions exist but to meet the requirements of concerned (persons) people directly, there is a strong need to develop innovative food products that additionally help reducing the obesity problem. One promising possibility is to develop functional food products that are purpose-built for the prolongation of satiety in humans, which consequently will lead to a lower intake of energy throughout the day.

Aim

Aim of the study was to develop a recipe with acceptable organoleptic properties for a cake containing SuperStarch, a physically modified starch. Furthermore the first evidence for an enhanced effect on satiety provided by a consumer study and in vitro tests should be confirmed.



Figure 1: 100g portion of cake (left: standard cake; right: enriched cake)

Acceptance Test

96 consumers (69% normal weighted, 21% over weighted, 10% obese) evaluated two samples (one with, one without the functional ingredient) regarding overall acceptance and acceptance of appearance, smell, taste as well as texture. Both products were well accepted. No significant differences between the two products were found in any of the acceptance attributes.

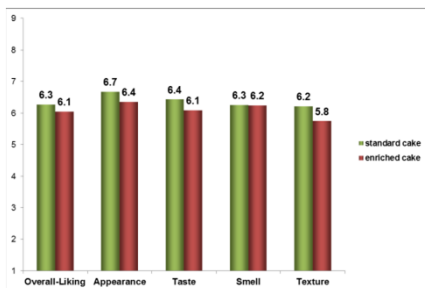


Figure 2: Mean values for the attributes asked in the acceptance test

Satiety Test

For the satiety assessment 60 subjects (61% normal weighted, 27% over weighted, 12% obese) rated their sensation of satiety on two days in the ZHAW's sensory laboratory. On one day the subjects received the standard food samples on the other day they received the enriched food samples. Ten of the subjects stayed at both testing days for three hours at the ZHAW and reported half-hourly their sensation of satiety. The rest of the subjects were allowed to leave after assessing their satiety immediately after eating. Before they left they were instructed not to eat anything for the next three hours and received again a questionnaire about their satiety status which they had to complete at home. There were no significant differences between the food samples regarding immediate satiety (directly measured after eating) and satiety after three hours. The 10 subjects who stayed at the ZHAW for a period of 2 ½ hours to evaluate satiety decline over time showed a tendency that the enriched food sample induced higher satiety effects than the standard food sample after 1, 1 ½, 2 and 2 ½ hours.

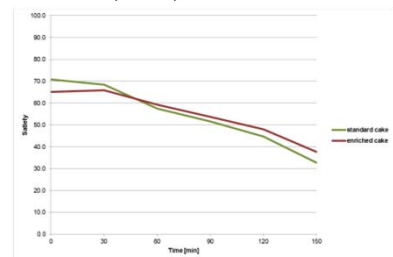


Figure 3: Temporal evolution of satiety (mean values) for the 2 ½ h panel (n=10)

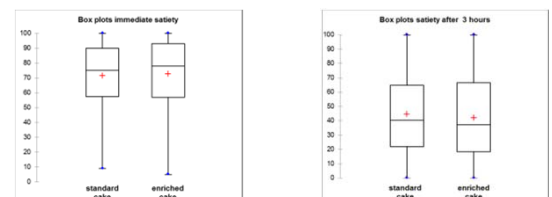


Figure 4 and 5: Immediate satiety and satiety after 3 hours for all subjects (n=60)

Conclusion

The results are promising regarding the organoleptic properties but the results from the satiety test could not confirm the results of a previous study. There are several issues which have to be checked before further studies can be conducted.

Contact:

ZHAW, Life Sciences and Facility Management
Gruental / 8820 Waedenswil, Switzerland
Annette Bongartz / annette.bongartz@zhaw.ch