Journal of Sensory Studies / Volume 32, Issue 4

ORIGINAL ARTICLE

Relationship between saliva protein composition and 6-*n*-Propylthiouracil bitter taste responsiveness in young adults

L. Rodrigues, G. da Costa, C. Cordeiro, C. C. Pinheiro, F. Amado, E. Lamy

First published: 21 July 2017
https://doi.org/10.1111/joss.12275

Funding information FEDER; FCT—Science and Technology Foundation, Grant/Award Number:
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Abstract

6-*n*-propylthiouracil (PROP) is widely used in nutritional and health studies. However, only a limited number of studies have compared saliva composition between PROP taster phenotypes. The main aim of this work was to assess the relationship between saliva proteome and PROP responsiveness in young adults ($N = 152$) taking into account body mass index (BMI) and sex. SDS-PAGE and 2-DE protein profiles of saliva collected before and after PROP stimulation were compared between super-tasters (ST) and non-tasters (NT) and proteins of interest identified by mass spectrometry. These groups were also compared for their salivary levels of type-S cystatins and carbonic anhydrase VI (CA-VI). The relationship between salivary proteome and PROP responsiveness was affected by sex and BMI. Even so, immunoglobulin chains increased and prolactin-inducible protein and type-S cystatins decreased in ST group, both in men and women. Only when the subject's weight was considered in the analysis was it possible to observe differences between ST and NT in the levels of type-S cystatins, suggesting that BMI has an effect on the relationship between these salivary proteins and bitter taste response. PROP stimulation induced changes in the amounts of salivary amylase, cystatins, and CA-VI, which differed between ST and NT and may be important in differentiating PROP

Practical applications

Inter-individual differences in 6-*n*-propylthiouracil (PROP) responsiveness correspond to the most studied variations in bitterness perception and have been accepted as a general marker of oral chemosensory sensitivity. Differences in PROP phenotype appears to be related to food preferences and dietary behavior. The mechanisms involved in inter-individual variation in bitter taste perception are complex and are not completely explained by genetics. Identifying salivary constituents potentially involved in PROP responsiveness can increase the understanding of taste function and consequently food acceptance. Moreover, it is important to know whether factors such as weight status and/or sex affect the way in which saliva influences taste perception.