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Pediatrics

Comparison of salivary proteome of children with different sensitivities for bitter and sweet tastes: association with body mass index

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Abstract

Background/objectives

Oral sensorial perception is a key aspect in food choices and knowing the mechanisms modulating such perception is of major importance in the context of child obesity, which is reaching high rates in Mediterranean countries. Salivary proteome has been linked to taste sensitivity in adults. The aim of this

study was to search for differences in salivary proteomes of children with different bitter or sweet taste sensitivities and to assess if these potential differences are associated with their body mass index percentile (BMI percentile).

Subjects/methods

387 children aged 8–9 years old were assessed for BMI percentile and classified according to their sensitivity to bitter and sweet tastes, according to their caffeine and sucrose detection thresholds, respectively. Saliva protein composition was compared among taste sensitivity groups, taking into account BMI percentile and gender, using gel-based proteomics approaches, coupled to mass spectrometry for protein identification.

Results

Among the salivary proteins related to bitter taste sensitivity, higher levels of cystatins were observed in bitter-sensitive children, in the case of those of normal weight, and in bitter low-sensitive, in the case of overweight children. For sweetness, the relationship between saliva and taste perception was also dependent on BMI percentile, with several proteins (including salivary cystatins) differing between taste sensitivity groups, with

disparities arising between normal-weight and overweight children. Cystatin isoforms A, B and SA were observed to be considerably increased in saliva from obese children.

Conclusions

Salivary proteome is related with sensitivities to bitter and sweet tastes in children, but the association is dependent on BMI percentile and gender.

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