

Association between TAS1R2 gene polymorphism (rs12033832) and sweet taste perception amongst Malay obese and non-obese subjects

ABSTRACT

Introduction: A growing evidence supported that variation of sweet taste perception, mediated by TAS1Rs gene variants could lead to excess sweetened food and beverages intake and also obesity. However, obesity development may also alter individuals' taste sensitivity and perception. Thus, it is best to further investigate whether or not the individuals' sweet taste sensitivity and acceptance are associated with variation in TAS1R2 gene and Body Mass Index (BMI) status.

Methods: This comparison cross sectional study comprised of 88 obese and 92 non-obese subjects aged 20-45. All the subjects were genotyped for TAS1R2 gene variant at rs12033832 using polymerase chain reaction - restriction fragment length polymorphism (PCR-RFLP). Suprathreshold sensitivity for sweet taste was assessed using general Labeled Magnitude Scales. Intensity rating and hedonic test were carried out on 2 food samples (tea drink and rose flavoured agar) to examine subject's intensity rating and liking at different sugar contents.

Results: Our results showed that rs12033832 of TAS1R2 gene is associated with sweet taste perception among obese and non-obese subjects. No interaction effect between BMI status and TAS1R2 gene variant (rs12022832) was found on sweet taste measures. Overall, non-obese subjects with AA genotype on rs12033832 had the highest sweet taste sensitivity and dislike high sugar content products the most. The effect was reverse among the obese subjects with GG homozygous.

Conclusion: These findings suggest that TAS1R2 gene variation plays an important role in sweet taste perception among individuals and may have nutritional implications and obesity. © 2020 UPM Press. All rights reserved.