

Title: Multi Ethnicity diversity of polymorphism within the TAS2R38 gene and phenotypic correlation with bitter taste perception

Authors and affiliation

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Bitterness is natural taste component which protects us from consumption of plant toxins. G-protein-coupled receptors (GPCRs) bind with bitter substance like Phenylthiocarbamide (PTC) and transmit signals to the brain where flavour perceived. Three SNPs of TAS2R38 gene are responsible for individual's ability to taste bitter compound. **This study design was a questionnaire and Laboratory based study.** Study participants of Coventry University filled Food consumption questionnaire about age, gender, Ethnicity, favourite fruits and vegetables and preferences for bitter fruits and vegetables. Saliva sample was collected from all participants followed by PTC strip and Dye testing including photography of dyed tongue tip. Then restriction fragment length polymorphism (RFLP-PCR) with gel-electrophoresis was done on extracted and amplified amplicon of DNA including digestion with enzymes (HaeIII, RsaI, Eco47III, and Fnu4h). DNA- Sequencing was also done to confirm RFLP-PCR results. Statistical analysis was done by using SPSS, One-way ANOVA, Principal component analysis and Descriptive statistics. Total study participants were 32 (Female/male ratio was 2:1) with the age group 18- above 40 years. Bitter fruits and vegetables consumption trend of liking and disliking was more in age group 18-30 and then decreases with the increase of age which was confirmed with Principal component analysis of bitter vegetables $p=0.01$ and bitter fruits $p=0.00$. It was also confirmed by Bartlett's test $p=0.002$. PTC tasters were mostly white females followed by Asian Pakistani females. PTC has no significant correlation with age, gender and Ethnic backgrounds ($p=.375$). However, DNA concentration in the saliva sample was highest in Asians. An average number of taste buds were $21.75/cm^2$ in supertasters, $19.8/cm^2$ in mild tasters and $18.1/cm^2$ in nonstarters. It is concluded that there is a significant correlation between bitter fruits and vegetable consumption with age which decreases with the increase in age. However, due to lack of genotypic results, multi-ethnicity diversity of polymorphism within the TAS2R38 gene was not analysed. However, the phenotypic correlation was seen with bitter taste perception by counting fungiform papillae. Which were highest in number in supertasters, followed by less in mild tasters and very less in non-tasters.

Biography

Zanera Nawaz has completed his masters in 2019 from Coventry University, UK in Biomedical science and have three publications in Health sciences (two nationally and one internationally URL attached). She is member of IBMS as MIBMS, Sensory Integration, and American society of Microbiology. She is experienced medical lab technologist and had a lot of experience in clinical and Pathology labs. She is multilingual, (speaking English, Urdu, Hindi, and Punjabi fluently), Speaker, debater and health leader. She is working in Baxter International UK at Compounding site Croydon, London.
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