INTRODUCTION AND BACKGROUND

Bitterness is a natural taste component which protects us from consumption of plant toxins (1). G-protein-coupled receptors (GPCRs) bind with bitter substance like Phenythiocarbamide (PTC) and transmit signals to the brain where flavour is perceived. TAS2R38 gene is present on chromosome number 7 at q34 and its three SNPs (C/G, C/T and G/A) which are present on Amino acid position 49, 262, and 296 are responsible for individual’s ability to taste bitter compound (3). TAS2R38 gene haplotypes, PAV (taster) and AVI (non-taster) alleles are more common over 84% which are mostly present in American, Asian, European and African, while AAV and AAI are rare alleles and AVV and PVV were not observed frequently. However, due to lack of conclusion, these results were not analyzed. However, the phenotypic correlation was seen with bitter taste perception by counting fungiform papillae. Which was in number in supertasters, followed by less in mild tasters and very less in non-tasters.5

RESULTS and DISCUSSION

Total study participants were 32 (Female/male ratio was 2:1) with the age group 18-40 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 (Figure 1 & 2) which was confirmed with Principal component analysis of bitter vegetables p=0.01 and bitter fruits p=0.00. In this study, PTC has no significant correlation with age, gender and Ethnic backgrounds (p=375). An average number of taste buds was 21.75/cm² in supertasters, 19.8/cm² in mild tasters and 18.1/cm² in non-starters (Table 1). However, fungiform papillae show direct relation with Bitterness. Supertasters have greater number of fungiform papillae than mild or non-tasters (Pasigalia 2010). Genotypic analysis for 3-SNPs was carried out on digested PCR products (as shown in figure 3). SNP-1 shows 50% Asians Pakistanis have genotype GG with 25% GC, while for SNP-2 & 3 two Asian Pakistani participants show TT and AA genotype respectively (as shown in table 2). But according to NCBI database for genotyping, White European have 49% of GG with 32% of GC while Asians have 42% of GG with 11% of GA for SNP-1, 25% of TT for SNP-2 and 11% of AA for SNP-3.

CONCLUSION

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 conclusive 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.5

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