DIFFERENCES IN NUTRIENT INTAKES AND FOOD PREFERENCES BASED ON CANDIDATE SINGLE NUCLEOTIDE POLYMORPHISMS IN HYPERTENSIVE AND NON-HYPERTENSIVE ADULTS


BACKGROUND

Diet-related diseases, such as hypertension, remain to be one of the top leading causes of mortality and morbidity despite ongoing efforts in reducing its prevalence. Nowadays, nutrition researches are geared in conducting empirical studies using Nutrigenomics and Nutrigenetics approaches towards a more comprehensive and integrated management of such diseases. With the aid of high-throughput technologies, a study was conducted to assess the association of susceptibility genes and candidate SNPs with the dietary intake and food preferences of selected adults.

OBJECTIVES

The study aimed to determine the SNP genotypes of TAS1R3 rs307355 and rs307377, TAS2R38 rs713598, TRPV1 rs8065080, CD36 rs1761667, ADD1 rs4961, AGT rs699, and SLC2A2 rs8192675 among selected adults, and to determine variations in nutrient intake and food preferences based on SNP genotypes.

MATERIALS AND METHODS

A total of 995 genomic DNAs from the 8th National Nutrition Survey were analyzed to determine SNP genotypes via capillary sequencing and high resolution melt assays. Data were processed and analyzed according to SNP genotypes and blood pressure measurements. Chi-Square Tests for Comparison of Proportions and Hardy-Weinberg Equilibrium characterized and profiled the allelic frequencies of these SNPs. Analysis of Variance with Tukey’s Post Hoc Test found significant differences in nutrient intakes between and within genotypes. A 95% CI was assumed for all computations.

RESULTS

Minor allele frequencies of Filipino adults at TAS2R38 (40.71%), ADD1 (46.34%) and SLC2A2 (29.15%) loci were similar to that of Nigerians, Europeans, East Asians, East Anglians, Americans, and South Asians. TAS1R3 rs307377, TAS2R38 rs713598, AGT rs699, and SLC2A2 rs8192675 were in Hardy-Weinberg equilibrium, which means that the allelic frequencies are expected to remain among Filipinos over time. Among hypertensive adults, significant differences in nutrient intakes were observed among those with TAS2R38 rs713598, ADD1 rs4961 and AGT rs699 genotypes, indicating that majority of those carrying heterozygotes had higher nutrient intakes as compared to homozygotes. Commonly consumed foods also differed among those with TAS2R38 rs713598 and ADD1 rs4961 genotypes. On the other hand, variation in nutrient intakes were observed among non-hypertensive adults with TAS1R3 rs307355 and rs307377, TAS2R38 rs713598, TRPV1 rs8065080, CD36 rs1761667, ADD1 rs4961, AGT rs699, and SLC2A2 rs8192675 genotypes; also indicating that majority of those carrying heterozygotes had higher intakes as compared to homozygotes. Finally, the commonly consumed foods among this group significantly differed among those with TAS2R38 rs713598, TAS1R3 rs307355, TRPV1 rs8065080, CD36 rs1761667, ADD1 rs4961, and SLC2A2 rs8192675 genotypes.

CONCLUSION AND RECOMMENDATIONS

This study provided relevant initial findings on how candidate genes and SNPs can relate to nutrient intakes and food preferences. Further studies involving socio-behavioral aspects and family dynamics in food intake among Filipino adults in different regions of the country are warranted. Overall, this study underscores the importance of considering genetic variations in the development of dietary recommendations for Filipinos.