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Is *TAS2R38* genotype related to micronutrient intake, in a group of Irish adults and children?

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Sensitivity to the taste of phenylthiocarbamide (PTC) and its chemical relative 6-*n*-propylthiouracil (PROP), both of which contain an N═C—S moiety, is suggested to be the phenotypical marker of PROP taster status, which is genetically inherited[1]. Based on the response to such bitter-tasting compounds individuals can be classified as super-tasters (ST), medium-tasters (MT) or non-tasters (NT). The gene conferring PTC taster ability, *TAS2R38*, has three common single-nucleotide polymorphisms, responsible for the three taster categories. PROP sensitivity has been linked to increased sensitivity to other tastes, including sweet[2] and fat[3], which may in turn affect micronutrient intake[4].

The present study aims to examine whether *TAS2R38* genotype is related to micronutrient intake, in a group of Irish adults and children. The data was collected as part of a larger on-going project examining PROP taster status and its effect on fruit and vegetable intake. In the present study 408 children and 113 adults were recruited from the Dublin area. Micronutrient intakes were assessed through diet histories and analysed using WISP© (Tinuviel Software, Llanfechell, Anglesey, UK). *TAS2R38* genotyping was assessed by extracting DNA from buccal-cell swabs using the QiAMP DNA minikit (Qiagen UK, Crawley, West Sussex, UK) and genotyped for variants in the *TAS2R38* gene by K-Biosciences (Hoddesdon, Herts., UK). Statistical analysis was carried out using SPSS software (SPSS Inc., Chicago, IL, USA; ANOVA and *post hoc t* tests).

No significant differences were observed in adults for biotin, Ca, carotene, Cu, Cl, Fe, folate, I, K, P, Mg, Mn, Na, niacin, pantothenic acid, potential niacin, retinol, riboflavin, Se, thiamine, Zn or vitamins B_{12}, B_6, C, D, E and K. However, when split by gender folate and K intakes were found to be significantly different across taster groups in women ($P=0.039$ and $P=0.048$ respectively). No significant differences were observed in children for most of the micronutrients mentioned earlier, with the exceptions of riboflavin and vitamin B_{12} ($P=0.041$ and $P=0.008$ respectively). When split by gender vitamin B_{12} remained significant across taster groups in girls ($P=0.020$).

	Adults (*n* 113)							Children (*n* 408)						
	NT (*n* 29)		MT (*n* 65)		ST (*n* 19)			NT (*n* 128)		MT (*n* 202)		ST (*n* 78)		
	Mean	SD	Mean	SD	Mean	SD	*P*	Mean	SD	Mean	SD	Mean	SD	*P*
Minerals														
Ca (mg/d)	773	304	785	306	838	355	0.77	910	297	951	329	882	272	0.19
Cl (mg/d)	4006	1524	4216	1434	4053	1262	0.64	4184	1473	4274	1260	4283	1608	0.82
P (mg/d)	1342	364	1227	327	1275	292	0.30	1212	330	1243	391	1243	275	0.13
Mg (mg/d)	300	82	270	77	283	113	0.30	245	60	242	60	235	55	0.45
Zn (mg/d)	8.56	2.4	8.81	3.19	8.59	2.01	0.90	8.10	3.22	8.19	2.41	7.42	2.12	0.08
Fe (mg/d)	13.1	3.65	11.7	3.39	12.4	3.47	0.20	10.8	2.92	10.2	2.92	11.0	3.00	0.45
Na (mg/d)	2912	979	2609	1024	2686	855	0.32	2863	950	2941	794	2887	797	0.70
K (mg/d)	3328	1007	2971	775	3142	1139	0.20	2876	902	2849	747	2767	759	0.63
Vitamins														
Retinol (μg/d)	366	438	325	292	305	141	0.78	276	146	344	639	275	156	0.32
Riboflavin (mg/d)	1.77	0.57	1.81	1.97	1.72	0.66	0.98	1.83	0.65	1.95*	0.74	1.73	0.53	0.041
Folate (μg/d)	325	97.8	274	125	261	87.2	0.09	280	111.4	282.8	87.0	274	102	0.78
B_{12} (μg/d)	4.20	1.87	4.56	2.45	4.47	2.06	0.77	4.61	2.31	5.01*	3.27	3.87	1.77	0.008

Values were significantly higher than those for children in the ST group: $^{*}P<0.05$.

It is difficult to suggest why significant differences have been observed for riboflavin and vitamin B_{12} in children, and conclusions cannot be drawn until further analysis is carried out. Some of the exact reasons for this finding may become clearer when the food groups contributing to the differences in the mean daily intakes are analysed.

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