

THE INCIDENCE OF PTC TASTE SENSITIVITY IN THE POPULATION OF ANKARA

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Fox, in 1932, was the first to report that the bitter taste of substances like phenylthiourea and phenylthiocarbamide (PTC) could be detected by some people but not by others.¹ Subsequently, Harris and Kalmus^{2, 3} were able to show that the bitter taste of these substances was caused by the $\text{=N}-\underset{\text{||}}{\text{C}}-\text{S}$ component. Furthermore,

they reported that the percentage of non-tasters among Caucasians was 30, and that the mode of inheritance of this polymorphic character was autosomal dominant. The same workers, and Kitchin et al,⁴ demonstrated that the percentage of non-tasters was higher than expected among patients with non-toxic goiter. Further studies revealed that this was also true among patients with athyreotic cretinism⁵ and diffuse toxic goiter.⁶ Recently, Manlapes et al,⁷ showed a high incidence of non-tasters among patients with cystic fibrosis of the pancreas.

There are many reports from different parts of the world indicating the percentage of non-tasters in various population groups, but as far as we know, there have been no studies of the Turkish population. For this reason it was decided to study the population of Ankara for PTC taste sensitivity. Further, it was thought that the results of a study of the people in Ankara would be somewhat representative of the Turkish population as a whole because of the extensive migration to Ankara of people from all parts of the country in the past few years. This was shown to be true in a study of the incidence of erythrocyte G-6-PD deficiency in Turkey.⁸ In order to give a more accurate picture of the Turkish population, it is necessary to study the various ethnic groups here and the results of such a study now in progress will be reported in the future.

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TABLE 1

Age Sex	Age in years, sex, and per cent of non-tasters														
	2—4			5—8			9—12			13—16			16 and over		
	F	M	%	F	M	%	F	M	%	F	M	%	F	M	%
PTC tasters	2	18		31	6		39	214		12	208		376	695	
			20			11.9			15.6			23.06			20.5
PTC non-tasters	2	3		2	3		1	46		1	65		75	201	

Material and Method

Phenylthiocarbamide (PTC, from City Chemical Corporation, New York City, New York, U.S.A.) solution was prepared as follows: 65 mg PTC was dissolved in 50 cc distilled water by boiling the mixture until it became crystal clear. The tests were done by placing two drops of the solution on the back of the subject's tongue and he was then asked to swallow. The test was repeated if the subject reported no taste. The intensity of the reaction seems to be consistent in any one individual over several trials.

Our sample consisted of 2000 people, most of whom were students at Hacettepe School of Medicine or from other colleges in Ankara. Eighty-seven subjects were children hospitalized for various illnesses, excluding thyroid diseases. Of the 2000 subjects, 541 were female and 1459 were male. There were 653 subjects between the ages of two and 16, the remainder being over (Table 1).

All those who tasted some degree of bitterness were considered to be tasters. The rest, considered to be non-tasters, were also examined for the presence of goiter.

TABLE 2*

	Females	Males
Tasters	460	1141
Non-tasters	81	318
Per cent of non-tasters	14.9	21.79

* Among 2,000 residents of Ankara

Results and Discussion

The incidence of non-tasters in the group studied was 19.95 per cent. When the figures were analyzed according to sex, it was found that the incidence of non-tasters was 21.79 per cent among the males and 14.9 per cent among the females. This sex difference was statistically significant ($X^2 = 11.563$; $P < 0.001$). Because of this significant sex differential, a small additional sample of 141 subjects was tested in the same manner as described above (Table 3). The results of this test still indicated a slight but not statistically significant sex difference ($X^2 = 1.606$; $P < 0.001$).

TABLE 3*

	Females	Males
Tasters	45	73
Non-tasters	5	18
Per cent of non-tasters	10	19.8

* Among 141 students

It has been demonstrated that the majority (70 per cent) of Caucasians are tasters and our study shows that 80.0 per cent of Turks are tasters. The results of studies in some selected countries are given in Table 4. The percentage of tasters varies from 51 per cent among the Australoids to 98 per cent among American Indians.⁹

TABLE 4
INCIDENCE OF PTC TASTE SENSITIVITY AMONG
VARIOUS POPULATIONS

Population	Number tested	Percentage of tasters
Australoid	152	51
American		
Caucasians	> 6000	65 to 75
Negroes	> 3000	91
Indians	> 1000	90 to 98
Egyptians	208	76
African negroes	> 1000	91 to 97
Chinese	> 200	89 to 94
Arabs	?	63

Summary

The results of a study of phenylthiocarbamide (PTC) taste sensitivity among 2000 residents of Ankara indicate that the incidence of non-tasters is 19.95 per cent. It is probable that this rate of incidence is more or less true for Turkey as a whole, since the population of Ankara is made up of people from all parts of the country. However, in order to get a more accurate picture of the entire population, a more detailed study should be made of the various ethnic groups living in Turkey, and, to clarify the sex differential, a larger sample should be tested. Such studies are in progress and the results will be published when available.

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