

Taste Sensitivity to Phenylthiourea and Leprosy *

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Introduction

As a general picture, under infectious process of the leprosy bacilli, subjects with positive Mitsuda's skin reaction are resistant to leprosy or develop the tuberculoid form (benignant) of the disease, while Mitsuda negative subjects are susceptible or may develop the lepromatous form (malignant) of the infection. This dimorphism in reacting to leprosy bacilli has probably an hereditary background (Beiguelman, 1962*b*).

A previous paper (Beiguelman, 1962*a*) reported the results of an investigation of the incidence of non-tasters for phenylthiourea among leprosy subjects belonging both to tuberculoid and lepromatous forms. No significant differences were found neither among the age-groups, nor between sexes and the two forms of leprosy. However the incidence of non-tasters among the White lepers (19.5%; No. = 1559) was significantly lower than that found in literature related to healthy Caucasoid samples of Mediterranean origin; these groups showing the lowest frequency of non-tasters among the White populations. These results suggested a correlation between taste ability for phenylthiourea and leprosy and prompted the present investigation.

Material and method

A sample of 900 Caucasoid leprosy patients, 600 males and 300 females, was investigated in hospitals for leprosy treatment in the State of São Paulo, Brazil. Almost all subjects had the lepromatous form of the disease. This leprosy group was compared to a control sample represented by 1000 Caucasoid males (500 policemen and 500 students attending a public high-school). Taste thresholds of the subjects were measured by means of the sorting technique described by Harris & Kalmus (1949).

The White ancestry of the subjects was confirmed by asking the origin of their grandparents and examining of their anthropological appearance. Subjects ascribed to both leprosy and control samples belong predominantly to the Mediterranean (Italian, Portuguese, Spanish) or to the Old-Brazilian stocks.

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Tab. 1. Distribution of taste thresholds among white Brazilian leprosy and healthy samples

Samples	Solution no.														Non tasters	
	<1	1	2	3	4	5	6	7	8	9	10	11	12	13		14
Lepers																
Males no.	46	34	18	9	10	6	15	32	101	152	104	57	14	2	—	117
(600) %	7.7	5.7	3.0	1.5	1.7	1.0	2.5	5.3	16.8	25.3	17.3	9.5	2.3	0.3	—	19.5%
Females no.	15	24	10	6	5	4	7	18	35	65	74	28	7	2	—	60
(300) %	5.0	8.0	3.3	2.0	1.7	1.3	2.3	6.0	11.7	21.7	24.7	9.3	2.3	0.7	—	20.0%
Total no.	61	58	28	15	15	10	22	50	136	217	178	85	21	4	—	177
(900) %	6.8	6.4	3.1	1.7	1.7	1.1	2.4	5.6	15.1	24.1	19.8	9.4	2.3	0.4	—	19.7%
Control																
Males no.	63	84	50	28	22	16	42	90	166	254	132	40	9	2	2	247
(1000) %	6.3	8.4	5.0	2.8	2.2	1.6	4.2	9.0	16.6	25.4	13.2	4.0	0.9	0.2	0.2	24.7%

Results and conclusion

Table 1 shows the taste threshold distribution for phenylthiourea for both samples and Fig. 1 shows the corresponding hystogram. The antimodal value, taken for separation of the tasters from the non-tasters falls in both samples at the solution 5 as found in other white populations.

As it can be seen in table 1, the frequency of non-tasters among lepers (19.5% among the males and 20.0% among the females) is appreciably similar to that previously found by using only the antimodal solution (Beiguelman, 1962a). Moreover,

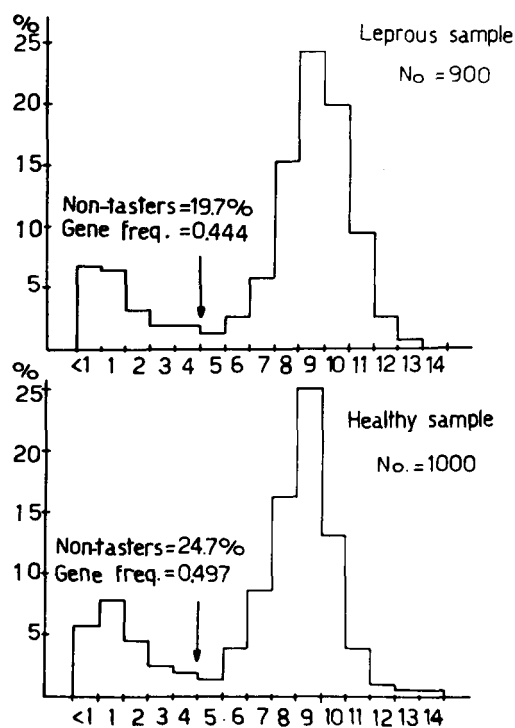


Fig. 1. Hystogram of the distribution of taste thresholds among white Brazilian leprous and healthy samples

the frequency of non-tasters among the healthy white Brazilians (24.7%) does not differ from those found among the populations racially related to the leprous sample: 24.7% among Portuguese (Cunha & Abreu, 1956), 24.84% among Spaniards (Pons, 1955), 23.56% among Italians (Silvestroni & Bianco, 1950).

Since no significant difference in the incidence of non-tasters was found among the lepers ($\chi^2 = 0.032$; 1 d.f.; $0.80 < P < 0.90$), sexes were pooled. The total lepers

sample compared to the healthy group shows a significant difference in the frequency of non-tasters ($\chi^2 = 6.922$; 1 d.f.; $P < 0.01$). Pooling the present data to that obtained in a previous investigation (Beiguelman, 1962a) the discrepancy is even more striking (Non-tasters = 19.6%; No. = 2459; $\chi^2 = 11.299$; $P < 0.001$). These results suggest that taste sensitivity to phenylthiourea and susceptibility to leprosy could depend upon common genetic factors.

Summary

Taste thresholds for phenylthiourea were measured among 900 Caucasoid leprosy patients and among 1000 healthy Caucasoid control males, of the State of São Paulo, Brazil.

The frequency of non-tasters among the leprosy sample (19.7%) is significantly lower than that found among the healthy sample (24.7%). These results suggest a correlation between taste ability to phenylthiourea and leprosy.

References

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RIASSUNTO

È stata calcolata la soglia del gusto per la feniltiourea in 900 lebbrosi ed in 1000 controlli, tutti Caucasici, nello Stato di São Paulo in Brasile. La frequenza di non-gustatori nei lebbrosi (19,7%) è significativamente più bassa di quella riscontrata nei controlli (24,7%). Tali risultati suggeriscono una correlazione fra il gusto per la feniltiourea e la lebbra.

RÉSUMÉ

Le seuil du goût pour la phénylthiouree a été calculé chez 900 lépreux et 1000 contrôles, tous Caucasiens, dans l'État de São Paulo au Brésil. La fréquence de non-goûteurs chez les lépreux (19,7%) est significativement moins élevée que celle des contrôles (24,7%). Ces résultats se raient donc en faveur d'une corrélation entre le goût pour la phénylthiouree et la lèpre.

ZUSAMMENFASSUNG

Bei 900 Leprakranken und 1000 Kontrollpersonen — alles im Staate São Paulo, Brasilien, lebende Kaukasier — wurde die Geschmacksschwelle für Phenylthiourea geprüft. Bei den Leprakranken war die Zahl der nicht-Schmecker (19,7%) wesentlich niedriger als bei den Kontrollpersonen (24,7%). Diese Ergebnisse lassen einen Zusammenhang zwischen Lepra und Phenylthiourea-Geschmacksempfindlichkeit vermuten.