

suppressor genes that reduce the proportion of brown keel tip plants. Our evidence is that at least one locus that is involved in the expression of cyanogenesis is also involved in the expression of keel tip colour. Plants recessive for the allele at the suppressor locus are both acyanogenetic and yellow keel tip. This suggests that the duplex \times nulliplex segregations they present underestimate the proportion of plants duplex and simplex at the brown keel tip locus. An increase in this ratio is in agreement with the hypothesis for preferential pairing presented here, and disagrees with the postulate that ratios of less than 5 : 1 are a result of equational chromatid segregation. The observed low frequency of quadrivalents per cell³ is also evidence against equational chromatid segregations.

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Taste Sensitivity to Phenyl-thio-carbamide and Endemic Goitre among Pewenche Indians

THE tasting thresholds to phenyl-thio-carbamide (PTC) and the clinical characteristics of the thyroid gland were determined in 88 women and 70 men belonging to the Pewenche branch of the Araucanian Indians. Most of the subjects were born (and all of them lived) in the geographically isolated Pedregoso Valley in the Chilean Andes, 38° 32' S. The total population of the valley is of about 1,000 persons.

According to Nagel *et al.*¹, who examined blood groups and haptoglobin types, this community represents a genetic isolate, and exhibits a high incidence of endemic goitre. Preliminary knowledge of the fertility trends of the subjects and of their pedigree relationships makes it possible to estimate the mean inbreeding coefficient, α , as 0.0105. The mean age of the Indians studied was 35.4 years with a standard deviation of 16.38, ranging from 7 to more than 70 years.

Table 1 shows the percentage distribution of the types of thyroid gland morphology, either normal or goitrous; the last category has been subdivided into diffuse and nodular varieties. Table 2 summarizes the distributions of the observed tasting thresholds to PTC for women and men separately obtained by means of the Harris and Kalmus technique². The recommended corrections for age and sex³ did not prove helpful at this level of analysis, for, in spite of some smoothing of the curves, the antimode zone remained unaltered. The proportions of non-tasters did not change either. The total non-taster percentage (3.2) is comparable with that found in other Amerindian populations^{4,5}. The proportions of non-tasters among the three types of thyroid gland forms (Table 1), given by only five subjects, are not significantly different if tested for independence ($\chi^2_{(2)} = 0.668$; $0.70 < P < 0.75$).

Other results should be compared with the present ones. A significant association has been shown between endemic goitre and the frequency of non-tasters to PTC in a recent survey made in Israel with children of Ashkenazic origin, 8-18 years old⁶. This correlation was not found in a

Table 1. MORPHOLOGY OF THYROID GLAND AND PERCENTAGE OF NON-TASTERS IN 158 PEWENCHE INDIANS

	Women		Men		% of non-tasters
	No.	%	No.	%	
Normal thyroid	6	6.8	20	28.6	3.8
Diffuse goitre	33	37.5	26	37.1	1.7
Nodular goitre	49	55.7	24	34.3	4.1
Total	88	100	70	100	3.2

Table 2. TASTING THRESHOLDS TO PHENYL-THIO-CARBAMIDE IN 158 PEWENCHE INDIANS DIVIDED ACCORDING TO SEX

	Solutions														Total	% of non-tasters	
	< 1	1	2	3	4	5	6	7	8	9	10	11	12	13			14
Men	3						1	3	5	20	28	8	1		1	70	4.3
Women	1	1						3	10	26	31	13	2	1		88	2.3
Total	4	1	1	6	15	46	59	21	3	1	1	158					3.2

population of White and Negro-Mulatto boys of the same age in Brazil⁷. On the other hand, sporadic goitres of various kinds have been shown to be related to the non-taster character in repeated observations made in English people^{8,9}. Such relationships, for both endemic and non-endemic goitre, appear to be conflicting, as was shown by Fraser¹⁰.

While our subjects are not comparable with those from Israel from the point of view of age and race, perhaps the main difference is that ours come from a genetical isolate, whose inhabitants have been submitted to selective goitrogenic influences for many generations. If this were so, part of the observed variation in the thyroid gland response in endemic goitre zones might be better explained by other factors of population structure in addition to the specific PTC genes effect.

Relationships of the PTC trait with tuberculosis¹¹, diabetes¹² and paralytic poliomyelitis have been explored¹³. Although some authors have not found the first two associations^{8,14}, these results could reflect the simultaneous operation of multiple selective factors. That the PTC polymorphism is unstable is clear from a recent analysis on the White to Negro gene flow in the United States¹⁵. In most of these investigations the impact of recent immigration is apt to conceal the slower dynamics of a selective factor or to create the false impression of an association.

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