Table 1. HAPTOGLOBIN DISTRIBUTION IN ASIAN ETHNIC GROUPS

Ethnic groups	No. of subjects tested	Percentage distribution of haptoglobin types				Gene frequency	
		0–0	1–1	2–1	2–2	Hp^1	Hp^2
Filipino (present work)	293	0·7	14·0	48·1	37·2	0·38	0·61
Thais (ref. 2)	682	2·3	5·7	37·1	54·8	0·24	0·73
Malays (ref. 5)	236	0·8	5·1	36·0*	58·1	0·24	0·76
Japanese (ref. 6)	349	1·4	6·0	35·0	57·6	0·24	0·75
Chinese in Taiwan (ref. 7)	172	0	9·3	37·8	52·9	0·28	0·72
Chinese in Malaya and Australia (ref. 5)	167	1·2	10·8	34·1	53·9	0·28	0·72
Koreans (ref. 8)	489	0	10·0	41·5	48·5	0·31	0·69
Indians in Malaya (ref. 5)	219	1·8	1·8	14·6*	81·7	0·09	0·91
Indians in the United States (ref. 9)	74	0	4·0	28·4	67·6	0·18	0·82

* Respectively, 0·4 and 0·9 per cent of the 2–1 haptoglobins for Malays and Indians were reported to be 2–1 modified.

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Frequency of the Atypical Pseudocholinesterase in Four Indian (Mexican) Tribes

Lehmann and Ryan[1] have noted the familial incidence of the low levels of serum pseudocholinesterase seen in several patients who were examined because of prolonged apnœa following the administration of suxamethonium. Kalow[2] confirmed the hereditary nature of the hypersensibility to suxamethonium and studied the kinetics of the pseudocholinesterase of normal and drug sensitive individuals, discovering that they differed in their activity towards several substrates and their resistance to different inhibitors. The latter property was utilized to devise a technique[3] called dibucaine number (DN) which clearly differentiated[4] three types of persons that corresponded presumably to: (*a*) normal homozygotes characterized by having DN above 72; (*b*) abnormal homozygotes with DN below 35; (*c*) heterozygotes with DN between 45 and 68. Family studies suggested that one pair of allelic genes now called E_1^u E_1^a (Motulsky[5]) controlled the type of pseudocholinesterase present.

Further investigations have proved the existence of another two rather rare genes participating in this system. The 'silent' gene E_1^s (ref. 6) characterized by the absence of enzyme activity in such a manner that, in the homozygote state E_1^s E_1^s, no pseudocholinesterase can be detected while the heterozygote $E_1^uE_1^s$ produces only normal enzyme; the latter can only be differentiated from the homozygote $E_1^uE_1^u$ by family studies. The other gene is the fluoride resistant one E_1^f which produces an enzyme not detectable by the DN test alone[7]. The heterozygotes $E_1^uE_1^f$ have low normal values of DN and the heterozygotes E_1^a E_1^f have slightly higher DN values than the homozygote $E_1^aE_1^a$. The only present way to depict the E_1^f gene is by determining both the DN and the fluoride number (FN) in each case[8].

The existence of a polymorphic system described here immediately raises the possibility that the gene frequencies in different populations may vary as has been observed with the blood group antigens, the abnormal hæmoglobins and many other genetically determined traits. So far the only available reports in this matter refer to Caucasians living in different countries and a small group of Australian Aborigines. This communication presents the results obtained in 377 Mexican Indians who belong to 4 different linguistic groups: 170 Nahuas, 96 Mixtecos, 64 Yaquis and 47 Tarahumaras. The details of their habitats and general characteristics have been presented elsewhere[9]. The people examined were not closely related and were apparently pure Indians, although the blood group investigations indicate that a small degree of admixture with Caucasians exists[9].

Only the DN test was performed in these samples as the sera were no longer available when we became aware of the fluoride number technique.

Three cases gave values between 68 and 72, and to classify them the suggestion of Kalow and Gunn[4] was followed, that is, those with DN of 69 and 70 were considered as heterozygous, and those with DN of 71 and 72 as normal homozygous. Thus, the 7 individuals with DN below 71 are heterozygous for the atypical gene (regardless of whether it is in combination with the E_1^u or E_1^f genes), and by simple gene count we get 7 E_1^a genes among a total of 754. This gives a frequency for E_1^a of 0·0092 which, although lower than observed in other populations, is not statistically different by the X^2 method from that found in Caucasians residing in Canada (0·0183)[4]; England (0·019), Greece (0·018) and Portugal (0·017)[10]; Germany (0·0169) and Czechoslovakia (0·0426)[11]; or Australian Aborigines (0·0051)[12].

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