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Ag Groups of the Krahó Indians of Brazil

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Abstract. A total of 73 sera obtained in two villages of the Krahó Indians of Brazil were tested for nine Ag factors. They were uniformly (x–y+), (a_1–d+), (t+z–) and (h–) but showed polymorphism at the c,g genetic site, the frequency of Ag^g being 0.63. Considering all the antigens together, the three arrangements found are not new, but their frequencies are different from those observed in one Caucasian, one Oriental and one African population.

Introduction

Information about the distribution of factors of the Ag system of serum low density lipoproteins is very scarce for Amerindians and Eskimos. Earlier studies with the C. de B. serum [2–4, 13] are difficult to interpret because this serum is now regarded as a mixture of antibodies. We have been able to locate just three other articles in which data obtained with specific antibodies were obtained in such groups [1, 9, 11] and only one deals with South American Indians [9]. We hereby report the results obtained in material collected among the Krahó Indians of Brazil.

Material and Methods

The Ge-speaking Krahó Indians are one of the main branches of the Eastern Timbira. They live near the small neo-Brazilian town of Itacajá (latitude 8° 10'S, longitude 47° 50'W) in the northern region of the Brazilian State of Goiás. Our studies among them were performed in two villages, Pedra Branca and Cachoeira, located some 60 km apart from each other, in the Indian reservation of Kraolandia. A census performed by one of us (*FMS*) in 1974 yielded a total number of 271 persons in Pedra Branca and 192 in Cachoeira. The detailed demographic data obtained there have been presented elsewhere [7]. These Indians already have 200 years of contact with non-Indians, but the evidence is mostly negative for the presence of foreign genes among them [8, 10, 12]. Historical information, however, indicates intertribal marriages with other Timbira groups and with the Xerente.

The blood samples were collected in B-D vacutainers containing ACD solution, and kept chilled as far as possible; they reached the base laboratory within 7 days of collection. There the plasmas were separated from the cells and stored at – 20 °C until testing. For the present investigation, aliquots were sent from Porto Alegre to Berne under refrigeration, where they arrived in good condi-

Table I. Reagents used in the Ag passive hemagglutination/inhibition tests performed

Ag factor	Anti-Ag serum		LDL coat for red cells	
	code	specificity	code	Ag phenotype
x	Gi	anti-Ag(x)	168	Ag(x+)
y	Steg	anti-Ag(y)	39	Ag(y+)
a_1	Fel	anti-Ag(a_1, z)	42	Ag(a_1+z−)
d	Gr 26	anti-Ag(y, d, c, z)	209	Ag(y−d+c−z−)
c	P 607	anti-Ag(x, c, z)	39	Ag(x−c+z−)
g	Gh	anti-Ag(x, a_1, g)	21	Ag(x−a_1−g+)
t	ZZ	anti-Ag(x, d, c, t)	13	Ag(x−d−c−t+)
z	P 599	anti-Ag(z)	24	Ag(z+)
h	Teah	anti-Ag(x, h)	405	Ag(x−h+)

Table II. Ag phenotypes observed among the Krahó Indians of Brazil

Phenotypes by factors	n	%	Phenotype arrangements		n
			code No.	specification	
x−y+	65	100	240	x−y+a_1−d+c−g+t+z−h−	7
a_1−d+	41	100	222	x−y+a_1−d+c+g+t+z−h−	4
c+g−	7	20	231	x−y+a_1−d+c+g−t+z−h−	2
c+g+	12	34			
c−g+	16	46			
t+z−	39	100			
h−	16	100			

tion. There they were converted into sera by clotting and typed using the passive hemagglutination/inhibition method described previously [6]. The monospecific reagents used are indicated in table I. Despite the occurrence of some nonspecific reactions, typing could be performed in the majority of the samples sent. In some cases, however, the amount of the material was not enough for the tests. These two factors, plus the scarcity of testing reagents, explain the different numbers of specimens tested for the different antigens. Since the number of samples finally studied was not large and there was no indication of heterogeneity between the two villages, the data obtained on them was pooled for this analysis.

Results and Discussion

Table II lists the phenotypes observed in these Indians. They were all Ag (x–y+) (a_1–d+) (t+z–) (h–), variation being observed at the c,g site only. The calculated Ag^g gene frequency was 0.63. As for phenotype arrangements, considering all the specificities found, the three complete phenotypes detected are those codified in Berne as 240, 222 and 231, listed in order of decreasing frequency.

As was mentioned in the introduction, there are few series with which we can compare these findings. Ag^x was detected in frequencies ranging from 0.25 to 0.60 among Eskimos [1, 11]. Its prevalence among the Peruvian Cashinahua Indians was reported by *Johnston* et al. [9] as 0.25, while no Ag (x+) samples were observed by us. We did not find Ag^{a1} either and encountered a frequency of 1.00 in relation to Ag^t, while the corresponding values in this same sample of Cashinahua Indians were 0.12 and 0.95, respectively. Since both the Brazilian and Peruvian samples are not large, these results cannot be viewed as true discrepancies.

These are the first data to be reported for factors c,g and h among Amerindians. The few samples tested by us proved to be uniformly h negative, but we found variation at the genetic site c,g. Considering all specificities together, the three combinations encountered are not new. But their frequencies, as far as they are representative considering the small number of specimens tested for all nine Ag factors, seem to be different from those observed among the Swiss, Tibetans and Senegalese [5]. It is clear that further studies of the Ag polymorphism among American Indians should be most rewarding for the delineation of their genetic make-up and its differentiation from those of other ethnic groups.

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