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Distribution of the ABO Blood Groups and Rh(D) Factor Among the Scheduled Caste Population of Punjab

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INTRODUCTION

The data on the blood genetic markers among the Scheduled Caste population of Punjab are limited (Sidhu and Sidhu 1980; Ahuja and Sidhu, 1981; Sehgal et al., 1986; Sidhu and Sidhu, 1988; Sidhu, 1994,1995,1999). Therefore, the present study was planned to fill this void on the genetic map of Punjab by providing data on two blood group markers among the four Scheduled Caste endogamous groups, viz., Balmiki, Dhanak, Ravidasia and Ramdasia.

MATERIALS AND METHOD

Blood samples from a total of 1,150 unrelated individuals of both sexes were drawn at random from the Harijan settlements in Amritsar and Moga districts of Punjab. Blood samples were taken from finger pricks, and the usual open slide method of testing for ABO blood groups and Rh(D) factor was followed. Proper controls were set to ensure the validity of results. The gene frequencies for these two systems were calculated after Mourant et al. (1976).

RESULTS AND DISCUSSION

ABO Blood Group System: The percentile and allele frequencies of the ABO blood groups are presented in Table 1. It is observed that blood group A ranges from 18.0 to 35.6%, group B from 34.0 to 44.0%, group AB from 7.0 to 11.4% and group O from 27.0 to 33.5%. In the combined data, most frequently occurring blood group is B (37.56%), followed by O (31.21%), A (21.91%) and AB (9.30%). The frequency of *A*, *B* and *O* alleles among the Scheduled Caste populations is 0.171, 0.270 and 0.559, respectively. A similar frequency distribution of the ABO alleles has been reported in several other Scheduled Caste populations of India, such as, Meghwal and Salvi of Rajasthan (Thukral and Bhasin, 1990), Harijans of Haryana (Kushwaha et al., 1990), Scheduled Castes of Uttar Pradesh (Mandal, 1992) and Scheduled Castes of Punjab (Sidhu, 1994,1995,1999). The Chi-square (χ^2) test for intergroup comparisons revealed that the Balmikis were significantly different from the Dhanak ($\chi^2 = 5.50$; d.f. 3; $p < 0.02$) and Ravidasia ($\chi^2 = 5.55$; d.f. 3; $p < 0.02$). Similarly, the Dhanak differentiate themselves from Ramdasia ($\chi^2 = 5.32$; d.f. 3; $p < 0.02$) and Ravidasia ($\chi^2 = 4.75$; d.f. 3; $p < 0.05$) population.

Rh Factor: Out of the 1,150 subjects tested, 1,119 were found to be Rh-positive and 31 Rh-negative. The frequency of *D* and *d* alleles among the combined data is 0.836 and 0.164, respectively. It is apparent from Table 2 that there is no variability in Rh(D)-negative incidence in the Scheduled Caste populations of Punjab. For the Rh(D) blood groups, all the Scheduled Caste endogamous groups showed homogeneous distribution.

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KEY WORDS Blood groups. Scheduled Castes. Punjab.

ABSTRACT The distribution of ABO blood groups and Rh(D) factor has been studied among the four endogamous groups (Balmiki, Dhanak, Ravidasia and Ramdasia) of Scheduled Caste population of Punjab. The percentage frequencies of O, A, B and AB groups in the combined data were found to be 31.22, 21.91, 37.57 and 9.30, respectively. The Rh negative incidence was recorded as 2.70%. The distribution of these blood genetic markers is well within the ranges observed for other Schedule Caste populations.

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Table 1: Phenotype and allele frequencies of the ABO blood groups among the Scheduled Castes of Punjab

Population	*Numberobserved*	*ABO phenotypes*				*Allele frequencies*		
		O	*A*	*B*	*AB*	*A*	*B*	*O*
Balmiki	500	157	110	176	57	0.184	0.256	0.560
		(31.4)	(22.0)	(35.2)	(11.4)			
Dhanak	200	54	42	88	16	0.157	0.323	0.520
		(27.0)	(21.0)	(44.0)	(8.0)			
Ravidasi	200	67	36	83	14	0.134	0.287	0.579
		(33.5)	(18.0)	(41.5)	(7.0)			
Ramdasi	250	81	64	85	20	0.185	0.246	0.569
		(32.4)	(25.6)	(34.0)	(8.0)			
Total	1150	359	252	432	107	0.171	0.270	0.559
		(31.22)	(21.91)	(37.57)	(9.30)			

Figures in parentheses are percentages.

Table 2. Phenotype and allele frequencies of Rh(D) blood groups among the Scheduled Castes of Punjab.

Population	*Numbe robserved*	*Rh(D) phenotypes*		*Allele frequencies*	
		Rh(D) +	*Rh(D) -*	*D*	*d*
Balmiki	500	486 (97.2)	14 (2.8)	0.833	0.167
Dhanak	200	195 (97.5)	5 (2.5)	0.842	0.158
Ravidasi	200	194 (97.0)	6 (3.0)	0.827	0.173
Ramdasi	250	244 (97.6)	6 (2.4)	0.845	0.155
Total	1150	1119 (97.30)	31 (2.70)	0.836	0.164

Figures in parentheses are percentages.

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