

Distribution of A1A2BO and Rh₀D Blood Groups Among Rajputs of Sirmaur, Himachal Pradesh

Aditi Chakravarty and M.P. Sachdeva

Department of Anthropology, University of Delhi, Delhi 110 007, India

KEY WORDS A1A2BO, Rh₀(D), Rajputs, Sirmaur, Himachal Pradesh

ABSTRACT The A1A2BO and Rh₀(D) blood groups have been studied in 250 Rajput individuals of Sirmaur district, Himachal Pradesh. The blood group B had the highest frequency (38 per cent) followed by A (24 per cent), O (21.6 per cent) and AB (16.4 per cent). In case of Rh₀(D), 92.8 per cent were +ve and 7.2 per cent -ve.

INTRODUCTION

Blood groups are among the best studied genetic markers to determine the gene pool of a population. The ABO and Rh blood groups are two such most studied systems to characterize the populations and to determine the similarities and dissimilarities among them.

Sirmaur is a small district occupying the South Eastern corner of the state of Himachal Pradesh in North India. The district lies between 77° 01' and 77° 49' east longitude and 30° 22' and 31° 01' north latitude and is predominantly mountainous with deep valleys.

Geographically, the Sirmaur district is divisible into three parts with respect to river Giri—the trans-Giri (Giripar) region, cis-Giri region and the plains of Kiardadun or Dun valley. The people in the trans-Giri region mostly have come from the neighbouring areas of Jubbal and Chaupal. But in the plains of Kiardadun valley, some of them have immigrated from plains of Punjab, particularly from Ludhiana, Hoshiarpur and Patiala districts. Population of the district is predominantly Hindus and the predominant castes are the Brahmans Rajput and Kanets. Amongst the Rajputs, the main sub-castes are Thakur, Chauhan, Panwar, Tunwar, Kashyap and Pandir. They inhabit the cis-Giri area.

MATERIALS AND METHODS

A total of 250 samples of blood were col-

lected from the apparently healthy unrelated individuals (both sexes) Rajput of Sirmaur district of Himachal Pradesh and analysed for A1A2BO and Rh₀(D) blood grouping. Serological tests were performed using standard techniques as advocated by Boorman et al. (1988). Gene frequencies were calculated by methods given by Mourant et al. (1976).

RESULTS AND DISCUSSION

The results of the analysis of A1A2BO and Rh₀(D) blood groups have been summarised in table 1 and table 2, respectively. Table 1 shows that the B phenotype has the highest frequency (38.0%) followed by A (24.0%), O (21.6%) AB (16.4%). The *ABO*B* allele incidence (0.3100) was much higher than the combined incidences of the *ABO*A1* (0.1953) and *ABO*A2* (0.0170) alleles. In case of Rh₀(D) blood groups 92.8 per cent were positive and 7.2 per cent negative, the allele frequencies being 0.7317 for *D* and 0.2683 for *d* (Table 2). The Rajputs of Sirmaur showed the allele frequencies of the A1A2BO and Rh₀(D) blood groups which were well within the range of various population groups of North-Western Himalayan region, particularly those of Himachal Pradesh (Bhasin et al., 1992, 1994).

Table 1: A1A2BO blood groups among Rajputs of Sirmaur

Phenotype	Observed number	Expected number	Allele frequencies
A1	56 (22.4%)	57.84	
A2	4 (1.6%)	4.13	<i>ABO*A1</i> = 0.1953
B	95 (38.0%)	98.07	<i>ABO*A2</i> = 0.0170
A1B	37 (14.8%)	30.27	<i>ABO*B</i> = 0.3100
A2B	4 (1.6%)	2.64	<i>ABO*O</i> = 0.4777
O	54 (21.6%)	57.05	
Total	250 (100.0%)	250.00	1.0000

D/σ = 1.111

χ² = 2.46, df2; not significant

Table 2: Rh₀(D) blood groups among Rajputs of Sirmaur

Phenotype	Number	Percentage	Allele frequencies
Rh ₀ (D) +ve	232	92.8	$D = 0.7317$
Rh ₀ (D) -ve	18	7.2	$d = 0.2683$
Total	250	100.0	1.0000

REFERENCES

- Bhasin, M.K., Walter, H. and Danker-Hopfe, H.: *The Distribution of Genetical, Morphological and Behavioural Traits among the Peoples of Indian Region*. Kamla-Raj Enterprises, Delhi (1992).
- Bhasin, M.K., Walter, H. and Danker-Hopfe, H.: *People of India. An investigation of Biological Variability in Ecological Ethno-economic and Linguistic Groups*. Kamla-Raj Enterprises, Delhi (1994).
- Boorman, K.E., Dodd, B.E. and Lincoln, P.J.: *Blood Group Serology* (6th Ed.), Churchill Livingstone, Edinburgh (1988).
- Mourant, A.E., Kopec, A.C. and Domaniewska-Sobczak, K.: *The Distribution of the Human Blood Groups and Other Polymorphisms*. Oxford University Press, London (1976).