

The ABO and Rh (D) Blood Groups Among Five Caste Populations of Uttar Pradesh

Prabir Kumar Mandal

Department of Genetics, Sanjay Gandhi Post Graduate Institute of Medical Sciences, Lucknow 226 001, Uttar Pradesh, India

KEY WORDS Polymorphism. Blood Groups. Caste Groups. Uttar Pradesh.

ABSTRACT The occurrence of the ABO and Rh (D) blood groups among 5 caste populations of Uttar Pradesh has been reported. The distributions of these blood markers are in genetic equilibrium and well within the ranges observed for other North Indian populations.

This paper reports the incidence of the ABO and Rh (D) blood groups among 5 caste populations viz., the Brahmin, Bania, Rajput, Yadav and Scheduled Castes of Lucknow, Uttar Pradesh.

MATERIAL AND METHODS

Blood samples were randomly collected from a total of 2357 individuals belonging to 5 major caste groups of Lucknow (U.P.) viz., the Brahmin, Bania, Rajput, Yadav and Scheduled Castes. Typing for the ABO and Rh (D) blood groups was done using standard anti sera with proper controls. The gene frequencies for the ABO and Rh (D) blood groups were calculated after Yasuda (1984) and Mourant et al. (1976) respectively.

RESULTS AND DISCUSSION

Phenotypes and gene frequencies of the ABO and Rh (D) blood groups are presented in tables 1 and 2, respectively. The populations are in Hardy-Weinberg equilibrium for both the blood groups. It is observed that group A ranges from 19.50 to 26.54%, group B from 32.80 to 40.44%, group AB from 6.63 to 17.10% and group O from 24.55 to 31.30%. The Rh (D) negative varies from 1.34 to 7.04%.

The overall incidence of B group (38.60%) is followed by O (29.01%), A (22.40%) and AB (10.10%), and the gene frequencies ($A=0.178$, $B=0.283$, $O=0.539$) are well within the North Indian ranges (Mourant et al., 1976; Tills et al., 1983). Same is true for the Rh (D) negative groups (4.37%, $d=0.209$).

Table 1: Phenotypes and gene frequencies for the ABO blood groups in various caste populations of Uttar Pradesh

Population	Number tested	ABO Phenotypes				ABO gene frequencies		
		O	A	B	AB	A	B	O
Brahmin	497	122 (24.55)	109 (21.93)	201 (40.44)	65 (13.08)	0.192	0.316	0.492
Bania	754	236 (31.30)	147 (19.50)	309 (40.00)	62 (8.20)	0.150	0.288	0.562
Rajput	422	127 (30.10)	112 (26.54)	155 (36.72)	28 (6.63)	0.187	0.253	0.560
Yadav	385	120 (31.20)	088 (22.90)	146 (37.80)	31 (8.10)	0.170	0.267	0.563
Scheduled Castes	299	079 (26.42)	071 (23.74)	098 (32.80)	51 (17.10)	0.223	0.282	0.495
Total	2357	684 (29.01)	527 (22.40)	909 (38.60)	237 (10.10)	0.178	0.283	0.539

Figures in parentheses are percentages

Table 2: Phenotypes and gene frequencies of the Rh (D) blood groups in various caste populations of Uttar Pradesh

Popula- tion	Number tested	Rh (D) Phenotypes		Rh (D) gene frequencies	
		Rh(D)+ve	Rh(D)-ve	D	d
Brahmin	497	462(92.96)	35(7.04)	0.735	0.265
Bania	754	719(95.36)	35(4.64)	0.785	0.215
Rajput	422	401(85.02)	21(4.98)	0.777	0.223
Yadav	385	377(97.92)	08(2.08)	0.856	0.144
Scheduled Castes	299	295(98.67)	04(1.34)	0.884	0.116
Total	2357	2254(95.63)	103(4.37)	0.791	0.209

Figures in parentheses are percentages

REFERENCES

- Mourant, A.E., Kopec, A.C. and Domanciewska-Sobczak, K.: *The Distribution of the Human Blood Groups and Other Polymorphisms*. 2nd Edition, Oxford University Press, London (1976).
- Tills, D., Kopec, A.C. and Tills, R.E.: *The Distribution of the Human Blood Groups and Other Polymorphisms*. Supplement 1. Oxford University Press, Oxford (1983).
- Yasuda, N: A note on gene frequency estimation in the ABO and ABO-like system. *Jpn. J. Hum. Genet.*, 29: 371-380 (1984).