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Distribution of A1A2BO, Rh_0D Blood Groups and ABH Secretor Status Among Jats of Churu, Rajasthan

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ABSTRACT The data are presented on the distribution of the A1A2BO, Rh_0(D) blood groups secretor status among the Jats of Churu, an endogamous population of Rajasthan. Samples consisted of 180 Jat individuals of both sexes. In case of the A1A2BO, *ABO* O* allele had the highest frequency of 0.6167 followed by *ABO*B* (0.1951), *ABO*A1* (0.1611) and *ABO*A2* (0.0271). The frequency of *Se* (0.6273) was much higher than *se* allele (0.3727). Out of 180 individuals, 93.3 per cent were Rh_0 (D) - positive and 6.7 per cent were Rh_0 (D)-negative

INTRODUCTION

The study of variation within and between the papulations is one of the main objectives of physical anthropologists. In the realm of such studies, A1A2BO and Rh_0 (D) blood groups and ABH secretor status polymorphism secure a significant position as genetic markers in the understanding of human diversity.

As regards secretor status, new interest based on the distribution of secretor gene in man and non-human primates has been generated to establish correlation between lectins in diet and ABH polymorphism. Lately, a selection-relaxation hypothesis has been advanced to account for the sustained high frequency of non-secretors in the developed human societies as opposed to low frequency of recessive allele *se*, diminishing to zero, in many primitive human societies and its almost complete absence in apes and monkeys (Bhalla, 1990). Though the state of Rajasthan is a fertile ground for anthropological research, there are as yet a few studies available on the genetic markers (Bhasin et al., 1992). It is therefore that the present study was undertaken.

MATERIALS AND METHODS

Churu is one of the 26 districts of Rajasthan situated in its eastern part. Jats of Churu are an endogamous group and marry in the same caste though among different sub-castes/gotras. A total of 180 samples of blood and saliva were collected from apparently healthy, unrelated individuals of both sexes and analyzed for the A1A2BO and Rh_0 (D) phenotypes and for secretor/non-secretor status.

RESULTS AND DISCUSSION

The results of the analysis of the A1A2BO and Rh_0(D) blood groups and ABH secretions in saliva are shown in tables 1 and 2.

Table 1: A1A2BO phenotypes and allele frequencies among Jats of Churu, Rajasthan

Phenotypes	*Observed number*	*Expected number*	*Allele frequencies*
A1	41 (22.8%)	42.01	
A2	6 (3.3%)	6.15	*ABO*A1* = 0.1611
B	49 (27.2%)	50.17	*ABO*A2* = 0.0271
O	66 (36.7%)	68.46	*ABO*B* = 0.1951
A1B	14 (7.8%)	11.31	*ABO*O* = 0.6167
A2B	4 (2.2%)	1.90	
Total	180 (100.0%)	180.00	1.0000

$D/\sigma = 1.112$
$\chi^2 = 3.1$; df = 2; $0.70 > P > 0.50$

Table 2: Rh_0 (D) phenotypes and allele frequencies among Jats of Churu, Rajasthan

Phenotypes	*Number observed*	*Percentage observed*	*Allele frequencies*
Rh_0(D) + ve	168	93.33	*D* = 0.7418
Rh_0 (D)	12	6.67	*d* = 0.2582
Total	180	100.00	1.0000

In case of the A1A2BO blood group system phenotype O has the highest incidence (36.67%) followed by B (27.22%) and then A

Table 3: Phenotypes and allele frequencies of ABH secretors and non-secretors among Jats of Churu, Rajasthan

Phenotypes	*Number observed*	*Percentage observed*	*Allele frequencies*
Secretors	155	86.11	*Se* = 0.6273
Non-secretors	25	13.89	*se* = 0.3727
Total	180	100.00	1.0000

(26.11%) (Table 1). 93.33 per cent of the individuals tested were Rh_0 (D) positive and only 6.67 per cent were Rh_0 (D) negative (Table 2). The percentage frequency of secretors was much higher (86.11) than the non-secretors (13.89) (Table 3).

As regards the A1A2BO blood group system from the whole of Rajasthan, there are only two study reported so far on two Scheduled castes Meghwal and Salvi of Udaipur (Thukral and Bhasin, 1990) and on six caste and tribal groups of the state (Papiha et al., 1982). Reports on the ABH secretor status are no better-only two studies have been reported, on Dawoodi Bohras (Jindal and Basu, 1982) and on two scheduled castes Meghal and Salvi (Thukral and Bhasin, 1990). Nonetheless there have been two studies reported on Jat Sikhs of north India, whom the Jats of Rajasthan may have had a historic ethnic affiliation (Ibbetson, 1916). In the first study (Agarwal and Bhalla, 1981), the *se* allele had a frequency of 41.35 per cent while in the second reported from Patiala (Sehgal et al., 1986) the frequency was reported 47.03 per cent. The results of the present study show non-significant differences with both of them : χ^2= 1.20 and 3.18, respectively.

For the Rh_0(D) blood group, this is the first report on Jats of Rajasthan (see Bhasin et al 1992), though two series of studies have been reported for this caste group from neighbouring Haryana (Kushwaha et al., 1990 a, b) having *d* allele frequency of 29.8 and 29.9 per cent, respectively. The present frequency of about 26 per cent for this allele does not significantly differ from them (χ^2 = 0.82).

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