

The Study of ABO and Rh (D) Blood Groups among the Vishwakarma Population of Mysore District in Karnataka, India

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ABSTRACT The data for the present study consist of 143 unrelated individuals among the Vishwakarma population of Mysore District in Karnataka. Among the A, B, O alleles, frequencies O allele (0.5921) is proportionately higher than the A allele (0.2126) as well as B allele (0.1952). The comparison of the present study with other caste and tribes of Karnataka populations depicts relatively the lower O allele frequency than the most of other populations of Karnataka. The Rh⁻ (negative) proportion is observed to be 4.90% among the Vishwakarma Population. Further, the d gene is more than the majority populations of Karnataka.

INTRODUCTION

The Indian populations comprised of about 4,000 endogamous groups are stratified into various castes and tribes bound together by social factors offering an excellent scope for genetic studies (Bhasin et al. 1992). The ABO blood group system is widely adopted for studying population variation. Blood groups being simple and most appropriate genetic markers, still continue to rule in studies of human population variation and also it is a valuable tool in blood transaction, forensic medicine and paternity disputes (Bhasin et al. 1994).

Vishwakarma and VishwaBrahman are synonyms for Kammalan, the members of which class claim descent from the five faces of Vishwakarma, the architect of the gods. (Thurston and Rangachari 1987). The Vishwakarma are also called Panchalas. The term is applied to goldsmith, brass, iron, and copper smiths, carpenters and sculptures. Panchalas, a synonym for Canarese Kammalans, among whom five classes of workers are included, viz., gold and silver brass and copper, iron and stone (Thurston and Rangachari 1987). Vishwakarma population is distributed through-out India. According to the 1994 census, Vishwakarma population constitutes almost 11 percent of the total population of the country. This community is responsible for making world class idols and jewellery, all over the country. In view of the importance of blood group systems in population characteristics, the present investigation of the ABO and Rh (D) blood group

systems among the Vishwakarma population of Mysore District in Karnataka is chosen.

MATERIALS AND METHODS

The blood samples of 143 unrelated individuals (Males-81 and Females- 62) are randomly collected among the Vishwakarma population in three villages – Gundu Rao Nagar, Lalithadripura, Uthana Halli of Mysore district in Karnataka. The samples are analysed for ABO and Rh+(D) blood group systems using anti-A, anti-B and anti-D antisera using standard techniques advocated by Bhasin and Chahal (1996). Gene frequencies are calculated as given in Bhasin and Chahal (1996). The results of the present study are also compared with some other populations of Karnataka.

RESULTS AND DISCUSSION

The distribution of ABO blood group phenotypes and their gene frequencies among the Vishwakarma population of Mysore district in Karnataka is shown in table 1. The blood group 'O' (37.76%) is predominantly occurring type followed by 'A' group (26.57%) and the lowest proportion is noticed in AB blood group (11.89%). With regard to the gene frequencies of ABO blood group system shows that O allele (0.5921) is proportionately higher than A allele (0.2126) as well as B allele (0.1952). The D/o value (1.8477) indicates that the population is under genetic equilibrium and the χ^2 value is (1.1262) lower than

Table 1: Distribution of ABO blood group phenotypes and allele frequencies among the Vishwakarma population.

Pheno- type	Observed number	Observed percent- age	Expected percent- age	Allele frequencies
O	54	37.76	35.1	O=0.5921
A	38	26.57	29.7	A=0.2126
B	34	23.78	26.9	B=0.1952
AB	17	11.89	8.3	
Total	143	100.00	100.0	0.9999

$\chi^2 = 1.1262$, d.f. 3, $0.80 > P > 0.70$, $D/\delta = \pm 1.8477$ ($< \pm 2$)

± 2 , d.f.3, $0.80 > P > 0.70$ shows goodness of fit of the sample.

Table 2 shows the proportion of Rh (D) phenotype occurs with a frequency of 95.10% and Rh (d) with 4.90%. The gene frequencies of D and d found to be 0.7786 and 0.2214, respectively (Table 2). The present study falls within the ranges observed for some populations reported from the Karnataka state.

Table 2: Distribution of Rh(D) antigen among the Vishwakarma population.

Phenotype	No. tested	%	Gene frequencies
Rh(D) ⁺	136	95.1	D = 0.7786
Rh(D) ⁻	7	4.9	d = 0.2214
Total	143	100.0	1.0000

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