

ABO and Rh (D) Blood Group Distribution Among Voddes, A Backward Caste Population of Andhra Pradesh

B.K. Chandrasekhar Reddy and C. Sudarsan Reddy

Department of Anthropology, S.V. University, Tirupati 517502, Andhra Pradesh, India

E-mail: reddybkc@rediffmail.com

KEYWORDS Blood Groups. Genetic Polymorphism. Variation. Caste Groups

ABSTRACT A total of 144 unrelated Vodde individuals of Chittoor District, Andhra Pradesh were studied for the distribution of ABO and Rh (D) blood groups. The order of occurrence of ABO phenotypes is O>B>A. The allele frequencies are found to be 0.6791 (O); 0.1955 (B) and 0.1254 (A). Rh (-ve) frequency is found to be relatively low (0.69 %). The results of the present study are compared with other backward caste populations of Andhra Pradesh.

INTRODUCTION

Human Population Genetics is primarily concerned with the study of the nature of the biological variation in human populations which in turn will help us in understanding the nature and process of the ongoing evolution. India, with its vast amount of diversity presents a unique opportunity to delineate human variation based on socio-cultural, linguistic, ethnic and geographical criteria. Immunogenetic properties of red blood cells, generally described as blood groups, of a large number of tribal and caste populations of India have been investigated in order to find out inter and intra population variation. Summerizing the distribution of ABO Polymorphism in Indian populations Bhasin and Walter (2001) observed that the frequency of allele ABO^*B predominates ABO^*A with a general frequency of 0.233 and 0.186 respectively with an exception of Eastern Himalayan region. An increase in ABO^*A and ABO^*B and decrease in ABO^*O allele frequencies from South to North of India is also reported by them. The influence of selection via Smallpox, Cholera and Plague on ABO gene distribution in the sub-continent was emphasized.

Sero-genetic studies were conducted on several populations of Andhra Pradesh and a critical review of such studies shows that the information regarding Voddes is missing. Hence, the present study is undertaken to report the serogenetic characters among the Voddes and to compare the findings with those available on other Backward Caste populations of Chittoor district.

MATERIAL AND METHODS

The data for the present study is collected among Odde of Andhra Pradesh. The word Vodde or Odde is said to be a corrupt form of the Sanskrit word 'odhra', the name for the country now called Orissa, and the people are reported to have migrated from the Oriya country. Theoretically, the Voddes belong to the fourth and last of the Hindu Varnas 'Sudras'. The socio-cultural profile of the Voddes is almost the same as other backward classes. Though, their primary occupation is quarrying stone, sinking wells, constructing tank bunds and executing other kinds of earth work, they also are engaged as agricultural labourers on daily wages. The Headmen in Voddes is called as Yajamanadu, Samayagadu or Peddaboyodu, which is hereditary. His judgement is final in certain religious and economic issues of the community. They worship a number of Village level deities such as 'Durgamma', 'Gangamma', 'Polaramma', 'Nagamma' and 'Kalikamatha' besides Lord Venkateswara and Shiva. Polygamy and divorce are freely allowed to men and women are only restricted from changing eighteen partners. Even this limit is not set to the men. The family descent is patrilineal, patriarchal and patrilocal. Nuclear family is common type of family.

A total of 144 unrelated Vodde individuals of both sexes from two Villages namely Voddepalli and Chandragiri in Chittoor District, Andhra Pradesh were examined for the serogenetic characters namely ABO and Rh (D) blood groups. The blood samples were collected and analysed for ABO and Rh (D) following Race

and Sanger (1962) with the antisera obtained from Hoffkine Institute, Bombay.

RESULTS AND DISCUSSION

It is observed from the table 1 that the blood group 'O' occurs with highest frequency (47.22 %) among Voddas. The frequency of group B (29.17 %) is found to be higher than that of A (17.36%). AB phenotype occurs with 6.25 %. The allele frequencies show higher value for *O* (0.6791) followed by *B* (0.1955) and *A* (0.1254). The value of D/σ (-1.3052) indicates that the population is under genetic equilibrium and the value of $1/N \chi^2$ (0.7837) shows goodness of fit of the sample. The *O* allele frequency (0.6791) falls well within the range observed among other backward caste populations of Andhra Pradesh (0.5517 in Pelle Reddis by Chandrasekhar Reddy et al., 1990 to 0.7023 among Dhobis by Shubhashini, 1986). Higher frequency of *B* over *A* as in the case of Voddas of the present study is true with majority of the populations of Andhra Pradesh.

The Rh(+) phenotype occurs with a frequency of 99.31 % and Rh(-) as 0.69 %. The frequencies of allele *RH*D* and *RH*d* are found to be 0.9169 and 0.0831, respectively. Data available so far on populations of Andhra Pradesh shows the highest frequency for *RH*D* allele (0.9999) among Mangali (Panduranga Rao 1980) the lowest (0.6668) in Gollas (Narahari and Deepkumar, 1980) with allele *RH*D* frequency of 0.9169 the Voddas of the present study show

Table 1: The percentage and genotype frequency of ABO and Rh ($\pm D$) blood groups among Voddas

Trait	Phenotypes	Number	Percentage	Allele frequencies
ABO	O	68	47.22	<i>O</i> = 0.6791
	A	25	17.36	<i>A</i> = 0.1254
	B	42	29.17	<i>B</i> = 0.1955
	AB	9	6.25	
Rh	Positive	143	99.31	<i>D</i> = 0.9169
	Negative	1	0.69	<i>d</i> = 0.0831

affinity with majority of the backward caste populations of this region.

REFERENCES

- Bhasin, M.K., and Water, H.: *Genetics of Castes and Tribes of India*. Kamla-Raj Enterprises, Delhi (2001).
- Chandrasekar Reddy, B.K., Rami Reddy, V. and Balakrishnan, V.: Serogenetic variation among the Reddis of southern Andhra Pradesh. *Journal of Indian Anthropological Society*, 25: 26-34 (1990).
- Narahari, S. and Deepkumar, V.S.: Genetic studies among the Gollas and Madigas of Chittoor District, A.P. *Paper submitted at the Annual Conference of Indian Society of Human Genetics held at Hyderabad, Feb -1980* (1980).
- Panduranga Rao, P.: *A Genetic Study Among the Mangali (Telugu Nayi Brahmin) a Barbar's Caste of Chittoor District*. M.Sc. Dissertation, S.V. University, Tirupati (1980).
- Race, R.R. and Sanger, R.: *Blood Groups in Man*. IV Edn. Blackwells, Oxford (1962).
- Sethuraman, M.: *A Genetic Study in Six Endogamous Groups of Tirupati, Andhra Pradesh*. Ph.D. thesis, S.V. University, Tirupati (1979).
- Subhashini, A.B.: *A Genetic Study Among the Washermen of Tirupati, Andhra Pradesh, India*. Ph.D. Thesis, S.V. University, Tirupati (1986).