

Distribution of ABO Blood Groups and Rh(D) Factor Among Vannekula Kshatriyas of Chittoor District of Andhra Pradesh

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KEY WORDS Blood Groups. Caste Population. Chittoor District. Andhra Pradesh

ABSTRACT Data are presented on frequency distribution of the ABO and Rh(D) blood groups among Vannekula Kshatriyas, an endogamous caste population of Andhra Pradesh in South India. Frequencies of alleles *A*, *B*, and *O* were found 0.1270, 0.2171 and 0.6559, respectively. The incidence of Rh(D)-ve phenotype was found to be 5.1%.

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). In view of the importance of blood groups in population characteristics, the present investigation was undertaken to study the distribution of the ABO and Rh(D) blood groups among the Vannekula Kshatriyas of Chittoor district of Andhra Pradesh.

Thurston (1909) has expressed various views regarding the origin of Vannekula Kshatriyas. They were migrated from Tamil Nadu State to Andhra Pradesh two centuries ago. These people were distributed in all over Tamil Nadu with names like Nayakas and Reddiars. Their original language was Tamil but can speak Telugu, the local language fluently. The Vannekula Kshatriyas belong to the profession of cultivation, while those who practice the fishing are known as Agnikula Kshatriyas.

MATERIALS AND METHODS

The investigation was carried out among

Vannekula Kshatriyas, an endogamous caste population in two villages viz, Bandapalli and Chinabandapalli, 10 km away from the town of Chittoor. The total sample consisted of 215 unrelated healthy subjects of both sexes (125 males, 90 females) selected randomly.

The blood samples were determined for the ABO and Rh (D) systems by slide agglutination method using anti-A, anti-B and anti-D sera. The allele frequencies were calculated by using the methods of Mourant et al. (1976).

RESULTS AND DISCUSSION

Table 1 shows the distribution of the ABO phenotypes. The most frequently occurring blood group was O (42.33%) followed by B (33.95%), A (19.07%) and AB (4.65%). The incidence of the *A*, *B* and *O* alleles was found to be 0.1270, 0.2171 and 0.6559, respectively.

Table 1: Distribution of ABO blood groups among Vannekula Kshatriyas

Pheno- types	Observed		Expected		Allele Frequencies
	Number	%	Number	%	
O	91	42.33	92.49	43.02	<i>A</i> = 0.1270
A	41	19.07	39.29	18.27	<i>B</i> = 0.2171
B	73	33.95	71.36	33.19	<i>O</i> = 0.6559
AB	10	4.65	11.86	5.52	
Total	215	100.00	215.00	100.00	1.0000

$\chi^2 = 0.4278$; d.f. = 3 ($p > 0.05$) D/S = 0.6598

The allele frequencies of ABO system vary widely among caste populations of Andhra Pradesh. The *A* allele ranges from 0.0322 in Vysya (Reddy et al., 1978) to 0.2373 in Brahmin (Murthy and Lakshmi, 1971). For *B* allele, the highest frequency (0.3519) was recorded in Madiga (Reddy et al., 1980) and the lowest (0.1302) in Golla (Vijaya, 1978). As anywhere in India, the proportion of the O blood group is

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the highest in most of them. The frequency of *B* allele is usually higher than that of *A* allele, while in tribal populations the opposite was true more often. Relatively higher frequency of *B* allele than *A* allele in the ABO system is observed in majority of Indian populations and the people of Andhra Pradesh (Bhasin et al., 1994; Reddy et al., 1995).

The phenotype and allele frequencies of Rhesus Rh(D) blood group are presented in table 2. Of the 215 individuals tested, 11 were found to be Rh(D) -ve (negative) phenotype, giving a frequency of 5.1%. The frequencies of *D* and *d* alleles were 0.7737 and 0.2263, respectively. The frequency of *d* allele records the lowest (0.0664) among Relli (Ramesh, 1992) and highest (0.4243) among Madiga (Reddy et al., 1980). Thus the present value falls well within the range recorded for other caste population of Andhra Pradesh for Rh(D) blood group system.

Table 2: Distribution of Rh(D) blood groups among Vennekula Kshatriyas

	Number	%	Allele frequency
Rh(D) +ve	204	94.9	D = 0.7737
Rh(D) -ve	11	5.1	d = 0.2263
Total	215	100.00	1.0000

ACKNOWLEDGEMENTS

Thanks are due to the Head of the Department for providing facilities and to Dr. V.S.

Deepkumar for his active help during data collection.

REFERENCES

- Bhasin, M.K., Walter, H. and Danker-Hopfe, H.: *The Distribution of Genetical, Morphological and Behavioural Traits Among People 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).
- Mourant, A.E., Kopec, A.C. and Domaniewska-Sobczak, K.: *The Distribution of Human Blood Groups and Other Polymorphisms*. Oxford University Press, London, 2nd Ed. (1976).
- Murthy, J.S. and Lakshmi, R.: A study of ABO and other gene frequencies in twin cities of Hyderabad and Secunderabad. *Proc. Int. Symp. Hum. Genet., Waltair, India*, pp. 245-258 (1971).
- Ramesh, M.: *A Genetic Study on Rellis*. Ph.D. Thesis, Andhra University, Waltair, India (1992).
- Reddy, V.R., Gunasundaramma, K., Rao, A.P. and Ramamma, K.: ABO blood groups in the Balijas of Tirupati and other populations of Andhra Pradesh, South India. *Coll. Anthropol.*, 2: 206-211 (1978).
- Reddy, V.R., Gunasundaramma, K., Naidu, G.P., Reddy, B.K.C. and Reddy, K.R.S.: ABO and Rh blood groups in ten populations of Sri Venkateswara University area, Tirupati, South India. *Int. J. Heredity*, 12: 71-79 (1980).
- Reddy, T.P.K., Reddy, N.S. and Reddy, K.K.: A study on ABO and Rh(D) distribution among two endogamous populations of Chittoor district, Andhra Pradesh. *J. Hum. Ecol.*, 6: 279-280 (1995).
- Thurston, E.: *Castes and Tribes of South India. Volume VI*: 247-256 (1909).
- Vijaya, K.: *A Study of ABO and Rh (D) Blood Groups and Fertility among Golla Population in Bheemuni-patnam District of Andhra Pradesh*. M.Sc., Dissertation, Andhra University, Waltair (unpublished) (1978).