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ABO and Rh (D) Blood Groups among the Desuri Reddis of Chittoor District, Andhra Pradesh

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ABSTRACT A total of 190 unrelated Desuri Reddi individuals from Chittoor district, Andhra Pradesh were studied for the phenotype and allele frequency distribution of ABO and Rh (D) blood groups. The order of occurrence of ABO phenotypes is O>B>A. The corresponding allele frequencies are found to be 0.6728(*O*); 0.1839 (*B*) and 0.1433 (*A*). The allele frequency of *D* (0.7098) is more than *d* (0.2902). The present study was compared with the other studies reported to understand the affinity between them.

INTRODUCTION

ABO and Rhesus (Rh) blood group antigens are hereditary characters and are useful in population genetic studies, researching population migration patterns, as well as resolving certain medicolegal issues, particularly of disputed paternity and more importantly in compatibility test in blood transfusion practice. The knowledge of the distribution of ABO and Rh blood groups at local and regional levels are helpful in the effective management of blood banks and in blood transfusion services. Further, blood group systems are useful to determine the genetic variation within and between the populations. During the last four decades, numerous studies have been carried out on the genetic composition of various endogamous population groups in India (Bhasin et al. 1994, 2001). However, genetic studies among Reddy caste in Andhra Pradesh are very limited. Hence, in the present study the distribution of ABO and Rhesus blood groups has been reported among the Desuri Reddis, a sub-caste of the major caste Reddi of Chittoor district, Andhra Pradesh.

MATERIALS AND METHODS

The blood samples were drawn from randomly selected 190 unrelated individuals of both the sexes of Desuri Reddis, a sub-caste of a major caste the Reddi of Chittoor district in Southern Andhra Pradesh. The Reddis are one of the most predominant and largest Telugu speaking castes in Andhra Pradesh among whom more than 88 sub-castes were reported. (Surendranatha Reddy, 1993). Desuri Reddis, selected for the present study is found to be distributed mainly in the Chittoor district of Southern Andhra Pradesh. Agriculture is their mainstay of economy. Sub-caste endogamy is strictly maintained. Monogamy is the general pattern of marriage. Literacy rate is high compared to the neighbouring caste populations. Nuclear families are more common. The blood samples were collected according to the methods of Race and Sanger (1962). All samples were tested for the ABO and Rh blood group systems using anti-A, anti-B and anti-D sera. Gene frequencies were computed according to Mourant et al. (1976).

RESULTS AND DISCUSSION

ABO and Rh genes and phenotypes vary widely across races and geographical boundaries despite the fact that the antigens involved are stable throughout life. The resultant polymorphism remains important in population genetic studies, estimating the availability of compatible blood. The present study is, therefore, useful in providing information on the status of ABO and Rh blood group distribution in the Desuri Reddis.

The distribution of ABO blood groups is concerned (Table1), the group 'O' (47.37%) is the most frequently encountered phenotype in the population under the study. This observation is in accordance with the previous reports from other

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Table 1: Percentage distribution of ABO phenotypes and allele frequencies

Phenotypes	*Observed Number*	*%*	*Expected number*	*Allele frequency*
O	90	47.37	85.99	*O* = 0.6728
B	49	25.79	53.45	*B* = 0.1839
A	36	18.95	40.54	*A* = 0.1433
AB	15	7.89	10.02	
Total	190	100.00	190.00	1.0000

χ^2 = 3.5401

Table 2: Percentage distribution of Rh (D) phenotypes and allele frequencies

Phenotypes	*No.*	*%*	*Allele frequency*
Rh + ve	174	90.58	*D* = 0.7098
Rh – ve	16	8.42	*d* = 0.2902
Total	190	100.00	1.0000

parts of Andhra Pradesh. With regard to the other phenotypes of ABO blood groups, the frequency of group 'B' is 25.79%, and group 'A' is 18.95%, while 'AB' group was the least encountered phenotype with a frequency of 7.89% among the samples studied. The order of ABO percentage frequencies are O>B>A>AB. With regard to the allele frequency in the Desuri Reddis, allele *O* is observed with the highest frequency (0.6728) than *B* (0.1839) and *A* (0.1433). The insignificant χ^2 value (3.5401) shows that the study population is under genetic equilibrium. Table 2 shows the frequency of Rh (D) phenotypes among the study population. In the present study the frequency of Rh-D positive phenotype is 91.58% and 8.42% were Rh negative and the allele frequencies are being 0.7098 for *D* and 0.2902 for *d* alleles.

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