

The Study of Rhesus System among the Rajputs and Varlis of Dadra and Nagar Haveli

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ABSTRACT The present study is based on the study of phenotype and haplotype frequencies of the Rh (CcDdEe) system among the Rajput and the Varli populations of Dadra and Nagar Haveli. The haplotype *CDe* was found to have the highest percentile observed frequency for both populations. The Chi-square estimates for the comparison of Rh (phenotype) blood group distribution between the Rajput and the Varli groups show non-significant differences among them. In the present investigation, Rajputs and Varlis of Dadra and Nagar Haveli differ significantly from the neighbouring population groups of Gujarat, Maharashtra, Goa, Daman and Diu, which may be due to differential selective pressure occurring on the loci.

INTRODUCTION

The human population contains tremendous amount of variability, both in quantitative and qualitative characters. The main objective of biological anthropology is to find out those variations within and between population groups. The application of various serological, biochemical and molecular markers in the analysis of genetic variability of specimens collected from populations throughout the world can contribute substantially to the understanding of their population structure and affinities vis-à-vis each other. It also helps in describing and isolating the micro-evolutionary mechanisms operating at breeding population level within an ecosystem: that the observations are the result of genetics, and/or the environmental interaction and the genetic consequence of such factors like population size, migration and the mating pattern in that population.

In the present investigation, we present the haplotype frequency and the phenotypic frequency distribution of the Rajput and Varli population of Dadra and Nagar Haveli. It could further help in explaining the present day genetic structure of the population.

The Rajput population of Dadra and Nagar Haveli traces their origin to Rajasthan (Singh 1998). They are also spread over the states of Gujarat, Madhya Pradesh, and Uttar Pradesh. It is said that the Varli population originally migrated to South Gujarat from Konkana area of Maharashtra due to the pressure of the British. Now they are spread over the states of Maharashtra, Gujarat and the Union Territory of Dadra and Nagar Haveli (Singh 1998).

MATERIAL AND METHODS

A total of 199 blood samples from unrelated individuals of either sex were tested for Rh blood group from the Rajput and the Varli population of Dadra and Nagar Haveli. The samples were analyzed by using test tube method with the help of Anti-C, Anti-c, Anti -D Anti-E, and Anti-e antisera, as described by Bhasin and Chahal (1996). Haplotype frequencies were calculated following the method of Mourant et al. (1976).

RESULTS AND DISCUSSION

The phenotypic frequency distribution of Rh blood group among both the Rajput and the Varli population is depicted in Table 1. In the present study *CDe* has the highest observed percentile frequency for both the Rajput (0.3723) and the Varli (0.4209) populations. Amongst the Rajputs it is followed by *cDe* (0.3297), *cDE* (0.1551) and *CDE* (0.1429), respectively. Amongst the Varli population also *CDe* frequency is followed by *CDE* (0.2491), *cDe* (0.2241) and *cDE* (0.1059), respectively (Table 2).

The Chi-square values calculated to determine the goodness of fit between observed and expected frequencies of the Rajput and the Varli population for 10 degrees of freedom is 59.9487 and 122.49131, respectively, which corresponds to a probability that falls between the range of $p > 0.001$ which is statistically significant. When a comparison is made between the distribution of phenotypes between the Rajputs and the Varlis the chi-square value (19.65624) at 17 degree of freedom shows non-significant difference.

Table 1: Phenotype frequency distribution of Rh blood group among the Rajput and the Varli population groups of Dadra and Nagar Haveli.

Phenotype	Rajput				Varli			
	Obs. No.	Percentile frequency	Exp. No	Expected percentile frequency	Obs. No.	Percentile frequency	Exp. No	Expected percentile frequency
CCDEE	8	0.0808	2.20	0.02227	20	0.2000	6.12	0.06118
CCDEe	4	0.0404	10.81	0.10922	5	0.0500	20.91	0.20908
CCDee	21	0.2121	13.26	0.13390	35	0.3500	17.86	0.17864
CCddEE	0	0.0000	0.00	0.00000	0	0.0000	0.00	0.00000
CCddEe	0	0.0000	0.00	0.00000	0	0.0000	0.00	0.00000
CCdd ee	0	0.0000	0.00	0.00000	0	0.0000	0.00	0.00000
CcDEE	7	0.0707	4.40	0.04440	3	0.0300	5.33	0.05326
CcDEe	4	0.0404	20.71	0.20917	3	0.0300	20.10	0.20099
CcDee	25	0.2525	24.35	0.24597	8	0.0800	18.79	0.18795
CcddEE	0	0.0000	0.00	0.00000	0	0.0000	0.00	0.00000
CcddEe	0	0.0000	0.00	0.00000	0	0.0000	0.00	0.00000
Ccdd ee	0	0.0000	0.00	0.00000	0	0.0000	0.00	0.00000
ccDEE	8	0.0808	2.19	0.02213	6	0.0600	1.16	0.01159
ccDEe	5	0.0505	9.90	0.09999	5	0.0500	4.79	0.04799
ccDee	17	0.1718	11.18	0.11297	15	0.1500	4.94	0.04944
ccddEE	0	0.0000	0.00	0.00000	0	0.0000	0.00	0.00000
ccddEe	0	0.0000	0.00	0.00000	0	0.0000	0.00	0.00000
ccdd ee	0	0.0000	0.00	0.00000	0	0.0000	0.00	0.00000
Total	99	1.0000	99.00	1.00000	100	1.0000	100.00	1.00000

$\chi^2 = 19.6562$; Non-significant; Degree of freedom = 17 ; $0.20 > p > 0.30$

Table 2: Observed haplotype frequencies of Rh blood group among the Rajput and the Varli Population groups of Dadra and Nagar Haveli

Population	Haplotype								Total
	CDE	CDe	cDe	cDE	cde	cdE	Cde	CdE	
Rajputs	0.1429	0.3723	0.3297	0.1551	0.000	0.000	0.000	0.000	1.0000
Varlis	0.2491	0.4209	0.2241	0.1059	0.000	0.000	0.000	0.000	1.0000

The presently studied populations, i.e., Rajput (R) and Varli (V) were also statistically compared with the neighboring population groups from Gujarat, Maharashtra and Daman and Diu. From the comparisons carried out it was found that there was a significant difference between the 12 populations as shown by the chi-square statistic: Audich Brahmans (R= 93.82; V= 127.71), Lohana Cutchi (R= 69.436; V= 87.334) and Lohana Halia (R= 67.483; V= 92.205) of Gujarat; Chaudhuri (R= 50.224; V= 52.778), Vavasa (R= 33.16; V= 30.832), Katwalia (R= 43.906; V= 31.069) and Gamit (R= 87.987; V= 84.658) of Surat district; Gujarat, Saraswat Gaud (R= 91.212; V= 121.57), Misgar (R= 65.024; V= 87.589), Konkanikumbar (R= 64.888; V= 100.20) and Rana Kumbhar (R= 81.989; V= 81.599) of Bombay; Catholic Brahmin (R= 67.485; V= 91.205) of Goa, Daman and Diu. (Bhasin et al. 1992).

It could be inferred from the present investigation that both the Rajput and the Varli populations have a very characteristics distribution of phenotypes and are quite distinct from their distribution in the neighboring groups of Gujarat,

Maharashtra, Goa, and Daman and Diu. It could be possible that this marker may be under differential selective pressures due to reasons not explored in the present study, which is why it has unique pattern in the Rajput and the Varli population. It may also be possible that similar selection pressures are affecting this marker in both the Rajput and the Varli population.

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