

Serological Variation in Meos and Sunni Muslims and Comparison with Other Castes of Haryana

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ABSTRACT The present investigation involves the study of distribution of serological traits (A1A2BO, MN and Rh(D) blood group systems) among Meos and Sunni Muslims and their comparison with other castes of Haryana, which are, *Jat, Ahir, Ror, Saini, Kamboj, Kumhar* and *Chamar*. The frequency of different alleles falls well within the range of other castes of Haryana. Chi-square values for these blood groups systems showed statistically non-significant differences. The allele frequencies showed considerable heterogeneity among these populations. Meos and Sunni Muslims have similar values of hetrozygosity, that is, 0.507 and 0.503, respectively. These values are higher than other studied populations of Haryana. From the genetic structure analysis it was seen that only a small fraction of total gene diversity accounts for genetic difference among them and major portion of it was due to genetic variation within them. Minimum genetic distance (0.00064) was observed between *Ahir* and *Kamboj* and maximum (0.04931) between *Jat* and *Ror*.

INTRODUCTION

Study of biological variation helps in revealing relationships among human individuals as well as among various groups. India has a unique population structure, which is based on the caste system. The most unique and basic to the Indian population structure is the existence of exogamous sub-castes within each of these castes. During the last few decades several reports have been published on the distribution of blood groups among various ethnic groups from India (Bhasin et al. 1992, 1994; Bhasin and Walter 2001). In the state of Haryana, only a few studies are available with regard to serological traits (Khurana 1956; Kushwaha et al. 1990a, b; Yadav et al. 2001).

The present study was aimed at characterization of Meo and Sunni Muslim populations of Haryana by investigating some of the serological traits like A1A2BO, Rh(D) and MN blood groups and comparing them with the other castes of Haryana.

MATERIAL AND METHODS

Haryana is situated in the north-west Indian region. Bulk of the Haryana population comprises of Hindus (about 89%), followed by Sikh (about 6%), and Muslims (about 4%). Due to the considerable migration and mixing in the past, the population of Haryana at present comprises several well known ethnic groups. Most of the people are agriculturists, but division of castes according to occupation still persists.

In the present study, Meos and Sunni Muslims of Haryana were chosen for investigation. Meos live in Mewat, Faridabad, Gurgaon, and Mahendergarh district of Haryana. They were formerly Hindus. According to Hunter (1908), they converted to Islam at the time of Ghazni, Tughlak, Balban and Aurangzeb. Meos are settled cultivators and depend mainly on land. Some of them are in business, government services and some are self-employed. They maintain only self *gotra* exogamy. Sunni Muslims in Haryana are represented by *Dum, Dhobi, Julaha, Luhar, Madari, Nalband* and *Teli*. Most of these consist of Sunni Muslims, but some of these are represented by both Shia and Sunni Muslims. *Dums, Dhobi, Julaha, Luhar, Madari, Nalband* maintain self *gotra* exogamy, whereas, *Telis* do not marry within their own mother's and paternal grandmother's *gotra*.

The data regarding the genetic traits were collected from two different castes of Haryana

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Table 1: Phenotype numbers of different blood groups in Meos and Sunni Muslims of Haryana

Blood groups	Pheno-types	Meos		Sunni Muslims	
		Obs.	Exp.	Obs.	Exp.
ABO	O	70	65.44	56	57.06
	A1	37	43.62	51	49.51
	A2	5	4.72	3	3.17
	B	68	72.40	61	60.92
	A1B	19	16.73	16	17.97
	A2B	6	2.09	3	1.37
	Total	205	205	190	190
	χ^2	9.229		2.229	
	MM	32	34.23	30	28.79
	MN	47	42.55	39	41.36
MN	NN	11	13.22	16	14.85
	Total	90	90	85	85
	χ^2	0.984		0.274	
	Rh(D) ⁺	178		173	
	Rh(D) ⁻	27		17	
Rh(D)	Total	205		190	

RESULTS AND DISCUSSION

Table 2 shows the gene frequency of Meos and Sunni Muslims and their comparison with other castes of Haryana. The frequency of A1,

[illegible]

group system in the various populations of Haryana in which D allele incidence varied from nil in *Kamboj* (Kushwaha et al. 1990b) to 0.420 in *Jat* (Yadav et al. 1997b). In present investigation the frequency of D allele in Meos (0.363) and Sunni Muslims (0.299) fits well in this range.

Table 3 shows that there is a great interlocus variance in heterozygosity (H) values. Rh(D) being the least heterozygous (0.410) locus and ABO being the most heterozygous (0.534) locus. The variation in heterozygosity values could simply be a genetic consequence of population structure or it may indicate the effect of natural selection. Caste-wise comparison of h values shows that Meos and Sunni Muslims have similar values, that is, 0.507 and 0.503 respectively. These values are higher than other studied populations of Haryana (Table 3).

Table 4 shows that gene diversity of total population (H_T) comes to be 0.494. Intrapopulation (H_S) and Interpopulation (D_{ST}) gene diversity were found to be 0.466 and 0.028 respectively. At each locus, interpopulation gene diversity (D_{ST}) is only a fraction of total gene diversity (H_T). The average D_{ST} (0.028) is only about 5% of average H_T (0.494). So only a small fraction of total gene diversity accounts for genetic difference among them and major portion of it is due

Table 3: Hetrozygosity in Meos and Sunni Muslims and their comparison with other castes of Haryana

Population	ABO	MN	Rh(D)	Hetrozygosity (H)
Meos	0.590	0.472	0.460	0.507
Sunni Muslims	0.603	0.487	0.419	0.487
Jat	0.575	0.429	0.487	0.497
Ahir	0.582	0.414	0.378	0.458
Ror	0.108	0.494	0.420	0.341
Saini	0.611	0.483	0.348	0.481
Kamboj	0.584	0.427	0.382	0.464
Kumhar	0.557	0.454	0.436	0.482
Chamar	0.593	0.436	0.360	0.463
Avg. Hetrozygosity (H)	0.534	0.455	0.410	0.466

Table 4: Gene diversity among the different population of Haryana

Locus	Gene diversity in total population (H_T)	Inter-population gene diversity (H_S)	Inter-population gene diversity (D_{ST})	Coefficient of gene diversity (G_{ST})
ABO	0.596	0.534	0.062	0.104
MN	0.467	0.455	0.012	0.026
Rh(D)	0.419	0.410	0.009	0.021
Average	0.494	0.466	0.028	0.050

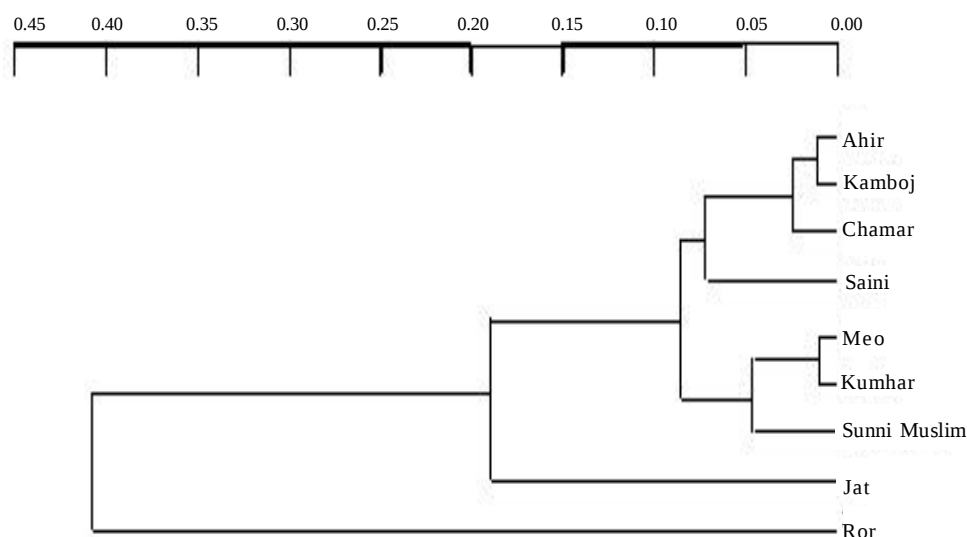


Fig. 1. Dendrogram of nine caste populations of Haryana based on Nei's genetic distance (D) matrix

Table 5: Estimates of Nei's genetic distance (D) among various caste population of Haryana

Population groups	Meo	Sunni Muslim	Jat	Ahir	Ror	Saini	Kamboj	Kumhar
Sunni Muslim	0.00423							
Jat	0.00565	0.01865						
Ahir	0.01088	0.01252	0.01506					
Ror	0.02625	0.01511	0.05530	0.04931				
Saini	0.01360	0.00554	0.03233	0.00980	0.01972			
Kamboj	0.01013	0.00941	0.01685	0.00064	0.04394	0.00728		
Kumhar	0.00262	0.00657	0.00751	0.00392	0.03503	0.00992	0.00407	
Chamar	0.01280	0.00808	0.02270	0.00341	0.04091	0.00673	0.00157	0.00783

to genetic variation within them. It can be assumed that these populations are at an early stage of differentiation. G_{ST} value (coefficient of gene differentiation) for ABO blood groups system are quite high (0.104) as compared to MN (0.026) and Rh(D) (0.021) blood group system.

Table 5 shows the genetic distances among the different population of Haryana and Figure 1 shows the dendrogram of these population based on genetic distances. Minimum genetic distance (0.00064) is observed between *Ahir* and *Kamboj* and maximum (0.04931) between *Jat* and *Ror*. It is interesting to note that *Ror* show consistently high genetic distances (0.01511-0.05530) with the other population groups. So, there is completely different constitution of *Ror* as compared to other castes of Haryana. Figure 1 shows that there are two clusters, one formed by *Ahir*, *Kamboj*, *Chamar* and *Saini* and other by *Meos*, *Kumhar* and Sunni Muslims. *Jat* and *Ror* are placed distant to them. However, to appreciate fully such relationships, data from several loci pertaining to both biochemical as well as serological markers are required.

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