

Distribution of Blood Groups Among Two Kashmiri Population Groups of Jammu and Kashmir, India

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ABSTRACT To study the genetic constitution of the two Kashmiri population groups—Muslims and Pandits, blood samples collected from Srinager district were analysed for the A₁A₂BO, MNSs, Rhesus and Kell blood group systems. There is a similarity in the distribution of these serological markers between the two studied groups.

Kashmiris are well spread in the different parts of the Jammu and Kashmir state but their major concentration lies in the valley of Kashmir. According to historians, the ancestors of Kashmiris are early immigrants from India proper. Most of the people of Kashmir claim their descent from Indo-Aryan stock. The mother tongue of all Kashmiris is 'Kashur/Koshur' or Kashmiri a language of Indo-Aryan family. Before the 14th century when the mass of the people was converted to Islam through the efforts of Shah Hamdan, the entire valley was inhabited by Hindus only. With the passage of time the valley became a Muslims majority area. Thus the two population groups, Kashmiri Pandits and Kashmiri Muslims though at one time constituted ethnically homogeneous population, came to differ from each other in faith and customs. At the close of 19th century major part of population was constituted by Kashmiri Muslims, the rest being Kashmiri Pandits.

Kashmiri Muslims

The Muslims of the Kashmir, belong to the Caucasoid racial group (Eickstedt, 1926). They profess Islam of both Sunni and Shia sects. The Muslims of Kashmir may be divided into four divisions—Sheikhs, Saiyads, Mughals

and Pathans. The Sheikhs are considered to be the descendants of Hindus and the pure Kashmiri Muslims, professing Sunni faith, form the major part of the population of Srinagar district and the Kashmir state. The Saiyads may be divided into those who follow the profession of religion and those who have taken to agriculture and other pursuits. These are indistinguishable from Kashmiri Muslims but profess Shia sect. The other divisions - Mughals and Pathans are not numerous.

Kashmiri Pandits

The Brahmans of Kashmir, more commonly known as Pandits, are considered to be the purest descendants of the Indo-Aryan race by Guha (Ray, 1957). Kashmiri Pandits or Brahmans are a very small group left, but they still continue to show a phenomenal instinct of survival which is primarily due to the tradition of marrying within the community. Kashmiri Pandits constitute about 10 per cent of the total population of the Srinagar district. They are not only caste conscious to large extent but also show adherence to their respective group.

In the present work, an attempt has been made to study the genetic make up and inter-relationship of Kashmiri Muslims and Kashmiri Pandits on the basis of gene frequency data of four blood group systems.

MATERIAL AND METHODS

Blood samples were collected from a total of 155 unrelated persons of Kashmiri Muslims ($n=122$) and Kashmiri Pandits ($n=33$) from the Srinagar district of Jammu and Kashmir in 1988.

Following the standard serological techniques and directions suggested by the manufacturers of various antisera: Biotest, Germany (Anti-A, -B, -K, -M, -N, -S, -C, -D, -E, -c and -e) and Associated Laboratories, Bombay (Anti-A₁ and -D), blood samples were tested for the A₁A₂BO, MNSs, Rhesus and Kell blood group systems. The gene and chromosome frequency calculations have been done after Mourant et al. (1976).

RESULTS AND DISCUSSION

The phenotype and gene frequency distribution for the blood group systems A₁A₂BO, MNSs, Rhesus and Kell are presented in tables 1 and 2, respectively

A₁A₂BO System

Among both Kashmiri Muslims and Kashmiri Pandits the frequency of gene *B* is higher (21.61 and 25.67 per cent) than that of gene *A* (15.67 and 14.45 per cent). Gene *A*₂ is absent among Kashmiri Pandits, while in Kashmiri Muslims its incidence is 3.36 per cent. The ABO gene frequencies observed among the present Kashmiri population groups are almost similar to that reported among the Moslems and Pandits of Kashmir by Bhattacharjee (1966).

MNSs System

The frequency of *M*_s is high as compared to *N*_s among Kashmiri Muslims (41.07 and 25.73 per cent, respectively) but for Kashmiri Pandits the opposite is true *i.e.* the frequency of *N*_s is higher (34.19 per cent) than that of *M*_s (30.94 per cent). Though, in both the

population groups, gene *S* is more associated with gene *M* than gene *N*. A pattern similar to that observed among the Kashmiri Pandits, has also been reported among the various population groups of Western Himalayas [Gaddi-Brahmans (Bhasin et al., 1982), Gaddi-Rajputs (Chahal et al., 1982), Kanet and Kolis (Papiha et al., 1984)]. On the other hand, the Kashmiri Muslims of present study are showing similarities with the Moslems and Pandits of Kashmir studied by Bhattacharjee (1966).

Rhesus System

The frequency of chromosome *CDe* is high (48.29 and 49.34 per cent) followed by that of chromosome *cde* which shows similar frequency among both the population groups. The frequencies of chromosomes *cDE* and *cDe* are high in Kashmiri Muslims (15.65 and 9.94 per cent, respectively) than Kashmiri Pandits (11.81 and 3.38 per cent, respectively). The frequency of chromosome *CDE* is about 2 per cent in both the groups.

Apparently, relatively low frequency of *CDe* (below 50 per cent) and high frequency of *cde* have been observed and chromosomes *cDE*, *cDe* and *CDE* are present. Similar pattern of distribution has also been reported among various population groups of Western Himalayas [Swangalas, Brahmans and Rajputs (Bhasin et al., 1983)].

Kell System

The gene *K* was detected only among the Kashmiri Muslims with a frequency 0.80 per cent whereas among Kashmiri Pandits, it was absent. The Kashmiri Muslims of present study, though showing somewhat low frequency of gene *K* as compared to that reported among other Muslim populations of north-west India are similar to Muslims of Central India (Roberts et al., 1974). The Kashmiri Pandits are showing similarities with the Brahmin populations of India.

Table 1: Distribution of blood groups among Kashmiri Muslims and Kashmiri Pandits of Jammu and Kashmir

System/Phenotype	Number Observed	
	Kashmiri Muslims	Kashmiri Pandits
A₁A₂BO		
O	48	13
A ₁	24	5
A ₂	3	0
B	39	11
A ₁ B	4	4
A ₂ B	4	0
Total	122	33
MNSs		
MMS	29	6
MMss	17	3
MNS	30	12
MNss	31	8
NNS	8	1
NNss	6	3
Total	121	33
Rhesus		
CCDee	38	13
CCddee	0	1
CcDEE	4	1
CcDEe	13	3
CcDee	29	8
ccDEE	7	2
ccDEe	8	0
ccDee	11	1
ccddEe	0	0
ccddcc	11	4
Total	121	33
Kell		
K+	2	0
K-	119	33
Total	121	33

From the distribution of A₁A₂BO, MNSs Rhesus and Kell systems, it has been observed that the Kashmiri Muslims, who are converts from Kashmiri Hindus, show similar distribution of gene frequencies as observed among the Kashmiri Pandits, which suggests that genetic differentiation among these two population groups is at the very early stage.

Table 2: Gene/chromosome frequencies of blood groups among Kashmiri Muslims and Kashmiri Pandits of Jammu and Kashmir

System/Genal Chromosome	Gene/Chromosome Frequency	
	Kashmiri Muslims	Kashmiri Pandits
A₁A₂BO		
A ₁	12.31	14.45
A ₂	3.36	0.00
B	21.61	25.67
O	62.72	59.88
Total	100.00	100.00
MNSs		
MS	22.15	26.63
Ms	41.07	30.94
NS	11.04	8.23
Ns	25.73	34.19
Total	99.99	99.99
Rhesus		
CDE	2.12	1.82
CDe	48.29	49.34
CdE	0.00	0.00
Cde	0.00	9.44
cDE	15.65	11.81
cDe	9.94	3.38
cdE	0.00	0.00
cde	24.00	24.20
Total	100.00	99.99
Kell		
K	0.8	0.0
k	99.2	100.0
Total	100.0	100.0

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