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Data on ABO Group of Binjhwars and Their Phylogenetic Position Among Other Tribal Populations of Madhya Pradesh, India

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ABSTRACT Data on ABO blood group system in Binjhwar tribe of Madhya Pradesh, India are presented. Frequencies of phenotype O, A, B, and AB blood groups among Binjhwars were 38.22%, 23.15%, 30.82% and 7.81%, respectively and allele *A*, *B* and *O* values are 0.1688. 0.2163 and 0.1649, respectively. The genetic distance analysis revealed that the present tribal population is genetically closer to the Gond, Halba, Bhatra, Bhil and Bhilala tribes inhabiting this Central Indian state.

INTRODUCTION

According to Russel and Hiralal (1916) the Binjhwars are a Dravidian tribe and comparatively civilzed among other tribal populations of Madhya Pradesh. They also opine that there is little or no doubt that the Binjhwars are an offshoot of the primitive Baiga tribe of Mandla and Balaghat, who occupy the Satpura or Maikal hills to the north of the Chattisgarh plains. The name is derived from the Vindhya hills and they worship the goddess Vindhyabasini of these hills as their tutelary deity (Russel and Hiralal, 1916). According to 1981 census the Binjhwars numbered 92,079 in Madhya Pradesh (Singh, 1994). The Binjhwars are an endogamous group. They are a landowning community and their primary occupation is agriculture (Sen, 1975; Singh, 1994).

In this study we report the distribution of the ABO blood groups among the Binjhwars and attempt to find out their phylogenetic position among other tribal populations of Madhya Pradesh.

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MATERIAL AND METHODS

Blood samples were collected from 743 unrelated Binjhwars in the Saraipali and Basna blocks in Mahasamund tehsil, and Bhatgoan block of Baloda bazar tehsil of Raipur district; and Pondiapera block of Katghora tehsil of Bilaspur district. Blood group analysis was carried out by standard serological techniques. For comparision with the present tribal population phenotype and gene frequency data for the ABO blood groups of other eleven tribal populations of Madhya Pradesh were collected from published sources. The genetic distances among these tribal populations were calculated after Nei (1972) and to the matrix of genetic distances thus obtained, the unweighted pair groups method (UPGM) was applied to construct a dendrogram after Sneath and Sokal (1973).

RESULTS AND DISCUSSION

Table 1 shows phenotypes and allele frequencies of the ABO blood group system among tribal populations of Madhya Pradesh including the present Binjhwars. In Binjhwars the phenotypy frequencies of A, B, O, and AB blood groups were 23.15%, 30.82%, 38.22% and 7.81% respectively. The alleles *A*, *B* and *O* values among the present Binjhwars were 0.1688, 0.2163, and 0.6149, respectively.

It is observed that among these twelve populations, phenotype frequency ranges between

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23.15% in the Binjhwars and 38.33% in the Kamar for A blood group; between 29.17% in the Kamar and 37.86% in the Korku for B blood group; between 14.17% in Kamar and 31.15% in the Bhatra for O blood group; and between 5.59% in the Halba and 21.74% in the Nagesia for AB blood group respectively.

Table 2 shows the genetic distances among the tribal populations of Madhya Pradesh, India and figure 1 shows the dendrogram of these populations based on genetic distances. Table 2 shows that smallest genetic genetic distance is observed between the Gond and Halba (0.00009). Bhatra, Bhil and Bhilala tribes are genetically closer to each other, while the Binjhwars with the former populations show smaller genetic distance in comparision to those of Khairwar, Korwa and Oraon tribal populations. The genetic distances between Khairwar and Korwa, and Korku and Nagesia are smaller. The maximum genetic distance is observed between Binjhwar and Kamar (0.10804). The present serological study therefore demonstrates close genetic relationships among the Binjhwar and several other tribal populations of Madhya Pradesh *viz*., Gond, Halba, Bhil, and Bhilala. However, to appreciate fully such relationships data from several loci pertaining to both biochemical as well as serological markers are required.

REFERENCES

Bhatia, H. M., Raghabendra Rao, V., Vasantha, K., Sathe, M. S., and Mishra, R. P. : A1A2BO, MN, Rh blood

Table 1 : Allele frequency distribution of the ABO blood groups in tribal populations of Madhya Pradesh

Populations	*n*	*Allele frequencies*			*Author*
		A	*B*	*O*	
Binjhwar	743	0.1688	0.2163	0.6149	Present Study
Bhatra	305	0.2111	0.2279	0.5609	Negi & Ahmed (1962) *c. f.* Sen (1975)
Bhil	1041	0.2080	0.2190	0.5730	*c. f.* Singh et al. (1994)
Bhilala	473	0.2333	0.2197	0.5430	ICMR Report (1984)
Gond	409	0.1830	0.2480	0.5680	ICMR Report (1986)
Halba	179	0.1950	0.2450	0.5590	ICMR Report (1986)
Khairwar	329	0.2200	0.2800	0.5000	Sharma (1989)
Korku	140	0.2500	0.3130	0.4470	Macfarlance (1941)
Kamar	120	0.3428	0.2763	0.3809	Malik & Singhrol (1992)
Korwa	114	0.2330	0.2800	0.4890	Sarkar (1949)
Nagesia	138	0.2820	0.2970	0.4200	Kumar & Singh (1976)
Oraon	479	0.2630	0.2370	0.4990	Bhatia et al. (1986)

Table 2 : Matrix of Nei's genetic distance (D) among tribal populations of Madhya Pradesh

Population	*Binjhwar*	*Bhatra*	*Bhil*	*Bhailala*	*Gond*	*Halba*	*Khairwar*	*Korku*	*Kamar*	*Korwa*	*Nagesia*
Bhatra	0.00442										
Bhil	0.00365	0.00079									
Bhilala	0.00882	0.00085	0.00195								
Gond	0.00306	0.00155	0.00239	0.00450							
Halba	0.00421	0.00074	0.00174	0.00260	0.00009						
Khairwar	0.01985	0.00734	0.01065	0.00703	0.00753	0.00584					
Korku	0.04912	0.02650	0.03215	0.02310	0.02769	0.02443	0.00642				
Kamar	0.10804	0.06721	0.07465	0.07912	0.07083	0.04045	0.02040				
Korwa	0.02460	0.00941	0.01317	0.00794	0.00842	0.00037	0.00414	0.00980			
Nagesia	0.06507	0.03604	0.04234	0.04113	0.03613	0.01364	0.00258	0.00826	0.00980		
Oraon	0.02322	0.00736	0.01013	0.00345	0.01288	0.00945	0.00494	0.07530	0.02978	0.00364	0.01343

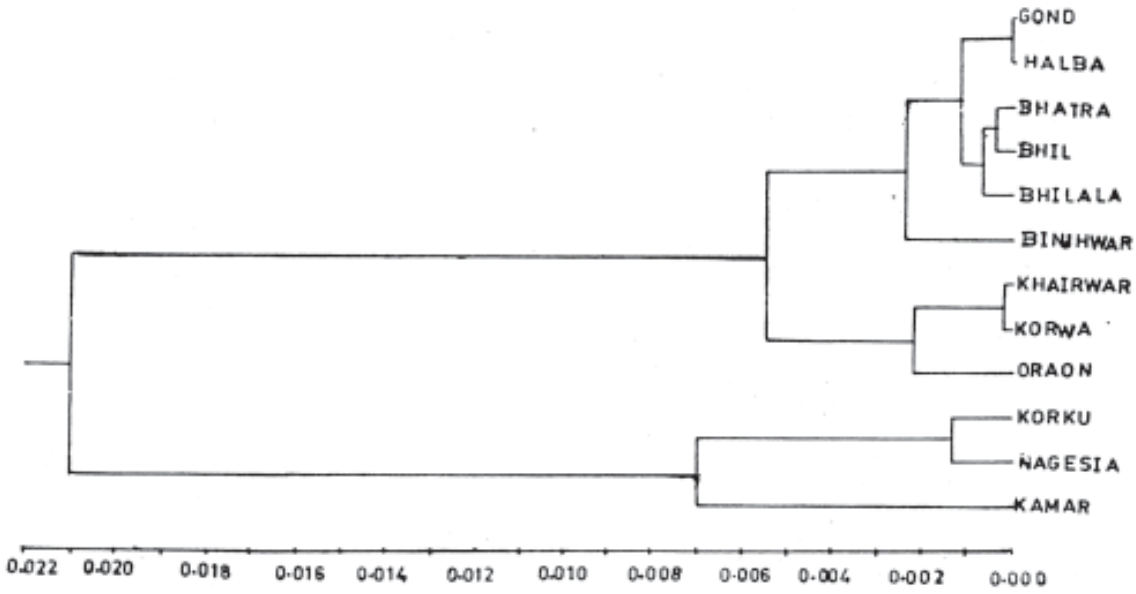

Fig. 1 : Dendrogram of twelve tribal populations in Madhya Pradesh

groups among the Gond, Oraon and Kawar tribal groups of Ambikapur district , Madhya Pradesh. *J. Ind. Anthrop. Soc.*, **21**: 73-78 (1986).

I.C.M.R. Report : *Survey of Genetic Markers in the Tribals of Madhya Pradesh.* Annual Scientific Report, Institute of Immunohaematology, Bombay (1984), c.f. Randhawa and Bhalla, (1990).

I.C.M.R. Report : *Reports of Tribal Studies in Jhabua, Ratlam, Ambikapur, Raipur districts of Madhya Pradesh and Ranchi Districts of Bihar.* Anthropology Unit, Institute of Immunohaematology, Bombay. *c.f. Genetic Atlas of Indian Tribes,* H.N. Bhatia and V. R. Rao, (Eds.). ICMR, Bombay (1986).

Kumar, N. and Singh, S. : *A1A2BO blood groups among the Nagesia of Surguja district, Madhya Pradesh,* Manuscript, Anthropological Survey of Indian, Nagpur, (1976). *c.f.* Singh et al,. (1994).

Macfarlance, E.W.E. : Blood groups among Balahis (weavers), Bhils, Korkus and Mundas, with a note on pardhis and aboriginal bloods type. *Journal and Proceedings of the Royal Asiat. Soc. Bengal,* **7**: 15-24 (1941).

Malik, N. and Singhrol, C.S. : Data on ABO and Rhesus blood groups among kamars, A Primitive tribal population of Madhya Pradesh. *J. Hum. Ecol.*, **3**:229-230 (1992).

Negi, R.S. and Ahmed, S.H. : The Bhatra, Muria and Mahar of Bastar : A blood group genetic study. *Bull. Anthrop. Surv.* **11** : 149 (1963).

Nei, M. : Genetic distance between populations. *Amer. Nat.*, **106**:283-292 (1972).

Randhawa, S. and Bhalla, V. Blood genetic markers (A1A2 BO, Rh and MN) in Gonds of district Mandala, M.P. *South Asian Anthroplogist,* **11** : 19-23 (1990).

Russel, R.V. and Hiralala, V.R. : *Tribes and Castes of the Central Provinces of India,* Published under the orders of the Central Provinces Adminstration (1916).

Sarkar, S.S. : ABO blood groups from Palamou, Bihar, India. *Am. J. phys. Anthrop.* **7**:559-562 (1949).

Sen, M. : *A Genetic Study of the Binjhwars.* Ph.D Thesis (Unpublished), Ravishankar University, Raipur, (1975).

Sharma, K.K.N. : Distribution of the ABO blood groups among the Khairwars of Madhya Pradesh. *Ind. J. Phys. Anthrop. Hum. Genet.,* **15**:9-12 (1989).

Singh, K.S. : *The Scheduled Tribes.* People of India, National Series, Vol. III. Anthropological Survey of India, Oxford University Press. Delhi (1994).

Singh, K.S. Bhalla, V. and Kaul, V. : *The Biological Variation in Indian Populations.* People of India, National Series, Vol. X. Anthropological Survey of India, Oxford University Press, Calcutta (1994).

Sneath, P.H.A. and Sokal, P.R. : *Numerical Taxonomy.* W.H. Freeman, San Fransisco (1973).