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Genetic Variation of ABO Blood Groups among Three Endogamous Tribal Populations of Chhattisgarh, Central India

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ABSTRACT Data are presented on the phenotype and allele frequency distribution of the ABO blood groups among three endogamous tribal population groups namely, Kanwar, Gond and Hill Korwa of Chhattisgarh state of Central India. The application of Hardy-Weinberg law and χ^2 test to the phenotype data demonstrated no significant departure from genetic equilibrium in this serological marker in each of them.

INTRODUCTION

Population genetics is an important field of investigation which is basically concerned with the study of mechanisms by which genetic changes are affected in a population. Genetic variation originates in a population due to mutation, chromosomal variability and recombination, on which various evolutionary forces, such as selection, genetic drift and migration operate to bring about changes in its genetic constitution. Population genetics of a large number animal and plant species has been studies in detail which have provided important information on extent of genetic variation in them.. As for India, studies on human population variation have been undertaken by different investigators from time to time using various genetical, morphological and behavioural traits and the results are compiled in Bhasin et al. (1992).

MATERIAL AND METHODS

For the present work, data were collected from three tribal populations namely Kanwar and Hill Korwa of Jashpur district and Gond of Gariyaband area of Raipur district of Chhattisgarh state located in Central India. A total of 755 subjects comprising 245 Kanwar, 108 Gond and 402 Hill Korwa of both sexes were studied. Standard serological techniques detailed in Bhasin and Chahal (1996) were followed for ABO blood group determinations.

The allele frequencies were calculated using the formulae given by Yasuda (1984) and significance of deviation from genetic equilibrium was tested by applying Hardy-Weinberg law and ÷^{2} test.

RESULTS AND DISCUSSION

The results of ABO blood group and allele frequency distribution in the three studied tribes

Table 1: Distribution of phenotypes and allele frequencies of ABO blood groups in three tribal populations of Chhattisgarh.

Tribe	*n*	*Phenotypes*				*Allele frequencies*			χ^2 *(d.f.=3)*
		O	*A*	*B*	*AB*	*ABO*A*	*ABO*B*	*ABO*O*	
Kanwar	245	71	95	70	9	0.2528	0.1855	0.5617	11.99
	Obs.	(28.98)	(38.78)	(28.57)	(3.67)				
	Exp.	75	102.41	64.43	9.45				
Gond	108	36	36	29	7	0.2277	0.1863	0.5860	0.72
	Obs.	(33.33)	(33.33)	(26.85)	(6.48)				
	Exp.	37.33	34.18	27.20	9.05				
Hill Korwa	402	114	75	173	40	0.1548	0.3137	0.5315	0.04
	Obs.	(28.36)	(18.66)	(43.03)	(9.95)				
	Exp.	112.72	76.66	174.50	39.79				

Obs. = Observed, Exp. = Expected
Figures in parentheses are percentages

namely, Kanwar, Gond and Hill Korwa of Chhattisgarh are presented in Table 1. The application of the goodness of fit Chi-square (χ^2) test to the present phenotype data demonstrated that the distribution of these blood groups was in genetic equilibrium as there was no significant departure from Hardy-Weinberg equilibrium in any of them (χ^2 range 0.06 - 1.11, df 3, $p > 0.05$, Table 1).

With comparatively low frequency of A blood group (18.66%) and high frequency of B blood group (43.03%), the Hill Korwa stand out from both the Kanwar and Gond who show rather high frequency of blood group A (respectively, 38.78% and 33.33%) compared to blood group B (respectively, 28.57% and 26.85%). Percentages of AB blood group varied between 3.67 and 9.95 in the present tribal material. As for allele frequencies, there was preponderance of *ABO*A* over *ABO*B* in the Kanwar and Gond while in the Hill Korwa the opposite trend was observed. (Table 1).Thus the present serological study demonstrated that genetically the Kanwar and Gond of Chhattisgarh are closer and the Hill Korwa stand out from both of them.

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