

ABO Blood Groups and Colour Blindness in Jains of Giridih District, Bihar, India

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ABSTRACT Data on two polymorphic systems viz. A_1A_2BO blood groups and colour vision deficiency were collected from Giridih district, Bihar on two sects of Jains, the Svetambar and Digambar Jains. The two samples exhibited no significant differences in the distribution of both these genetic traits.

INTRODUCTION

There is little bio-anthropological information available on the Jains of India. The present investigation therefore provides A_1A_2BO blood groups and red-green colour blindness incidence data on the Jains of Bihar, India.

The Jains are a populous religious community of India; the states of Maharashtra, Gujarat and Rajasthan having a larger proportion of them. They are divided into two sects - Svetambar and Digambar. Mostly they are traders (Vaishya) and very few are agriculturists.

MATERIAL AND METHODS

Data on A_1A_2BO blood groups and colour vision deficiency were collected from the Jains (both Svetambar and Digambar) of Pirtanr, Dumari, Giridih and Bermo blocks of Giridih district of Bihar, India. Care was taken to avoid close blood relations. Blood grouping was carried out by the conventional slide test method, following the procedures suggested by the manufacturer of antisera (Haffkine Institute, Bombay). Colour blindness was tested with the help of the Ishihara (1962) isochromatic colour plates and only

male subjects were examined. The tests were performed in sufficient day light. All the subjects of the present study can read and write the numerals. At first the plate no. 1 was shown to all the subjects and then the other subsequent plates were shown changing their order now and then to stop deliberate deception on the part of the subjects.

RESULTS AND DISCUSSION

The results for the blood groups are given in table 1. The Svetambar Jains are characterised by high incidence of blood group A_1 (28.26%) which is comparable to that of blood group B (26.09%). On the other hand, the Digambar Jains are characterised by an exceedingly high incidence of blood group B (43.48%) which is about twice as high as that of A_1 (21.74%). However, these differences were not statistically significant ($\chi^2 = 4.55$, d.f=3, $0.30 > p > 0.20$).

The incidence of colour blindness is considerably high in both the populations (Table 2). Altogether 12 subjects showing colour vision deficiencies were detected. Overall the present sample shows more or less equal incidence of protan and deutan types of defective colour vision, albeit no protan was detected in the Svetambar Jains. Interestingly, Post (1962) pointed out that deutans outnumbered protans and this is generally the case world-wide. The Jains of Bihar displayed considerably high incidence of total colour blindness and this may well be due to the effect of relaxed selection against colour blindness in them. There were no inter-group heterogeneity for this systems be-

Table 1 : Distribution of the ABO blood groups among the Jains of Bihar

Population	n	Phenotypes					Allele frequencies			
		O	A ₁	A ₂	B	A ₁ B	A ₁	A ₂	B	O
Swetambar Jains	46	17 (36.96)	13 (28.26)	-	12 (26.09)	4 (8.70)	0.2053	-	0.1918	0.6028
Digambar Jains	92	25 (27.17)	20 (21.74)	3 (3.26)	40 (43.48)	4 (4.35)	0.1416	00.0194	00.3034	0.5356

Figures within parantheses indicate percentages

Table 2 : Incidence of colour blindness among the Jains of Bihar

Population	n	Protan		Deutan		Total Colour Blind
		Strong	Mild	Strong	Mild	
Swetambar Jains	44	-	-	1 (2.27%)	-	3 (6.82%)
Digambar Jains	91	1 (1.1%)	-	-	1 (1.1%)	6 (6.59%)

tween the two Jains sects ($\chi^2 = 0.01$, d.f. = 1; $0.95 > p > 0.90$).

Thus the Swetambar and Digambar Jain samples exhibited similar distribution for the A₁A₂BO blood group and colour vision deficiency polymorphisms suggesting that the two component groups of Jains are genetically similar, even though they represent separate religious sects.

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