

Distribution of The LH and ABO Blood Types in the Kurmi of Central India

Shyamal Koley and Jaspal Singh Sandhu

INTRODUCTION

A new red blood cell membrane specificity called LH in the seed extracts of *Erythrina lithosperma*, a plant belonging to the family Leguminosae, was reported by Shrivastava et al. (1979). The name LH was given to this specificity to cherish the memory of Ludwik Hirszfeld, the celebrated Polish serologist. Studies relating to the immunochemical properties of the anti-LH lectin and its genetics and distribution have been made by Shrivastava et al. (1979), Reddy (1981), Kaur (1983), Koley and Shrivastava (1995) and Koley (1996).

The Kurmi is a very important cultivating Scheduled Caste community distributed widely throughout the Central India. The name 'Kurmi' is considered to be derived from the Sanskrit 'Krishi' (cultivation) or from 'Kurpa', the tortoise, incarnation of Vishnu. They have various subcastes like Usrete, Havelia, Singron, etc. The subgroups of the community are usually endogamous. Kurmi are Hindu by religion and worship village deities. Hindi is their mother tongue.

Since population differences are known to exist regarding the distribution of the ABO and LH blood types information from this particular to provide community on these two blood types, the present study was planned.

MATERIALS AND METHODS

A total of 327 blood samples was collected randomly from unrelated normal healthy Kurmi individuals of Sagar, Tikamgarh, Damoh, Chatterpur and Panna districts of Central India and were compared with the Brahmin, Bania, Kshatria, Kayasth and Muslim populations of the same areas (Koley and Shrivastava, 1992). Since sex differences are not known to exist in the LH system, the samples collected from both males and females were pooled for all analyses.

For the ABO typing, standard serological procedures were followed. The LH typing was done with anti-LH lectin prepared with the seeds of *Erythrina lithosperma* as described by Shrivastava et al. (1979).

RESULTS AND DISCUSSION

The phenotypic distribution of the LH types and allele frequencies in the Kurmi of Central India is shown in table 1. The Kurmi had the higher frequency (68.20%) for LH+ type than LH-type (31.80%). The allele frequency of LH+ in the Kurmi was 0.8258. When compared with the Brahmin, Bania, Kshatria, Kayasth and Muslim populations of the same areas, no significant differences were found among them regarding the

Table 1: Distribution of the LH blood types in the Kurmi and some other populations of Central India

Population	n	LH ⁺		LH ⁻		Allele frequencies		Chi-square value with the Kurmi	Probability
		Number observed	% observed	Number observed	% observed	LH ⁺	LH ⁻		
Kurmi (Present study)	327	223	68.20	104	31.80	0.8258	0.1742	-	-
Brahmin ¹	137	99	72.26	38	27.74	0.8501	0.1499	0.935	0.30>P>0.50
Bania ¹	115	81	70.43	34	29.56	0.8392	0.1608	0.383	0.50>P>0.70
Kshatria ¹	77	50	64.93	27	35.06	0.8058	0.1942	0.069	0.70>P>0.80
Kayasth ¹	45	25	55.55	20	44.44	0.7453	0.2547	1.554	0.20>P>0.30
Muslim ¹	48	32	66.67	16	33.33	0.8165	0.1835	0.144	0.70>P>0.80

¹Koley and Shrivastava (1992)

distribution of the LH types. Since blood group O individuals were found to be all LH+, this group has been excluded in calculating Chi-square values.

Table 2 gives the phenotypic distribution of the ABO blood types with their allele frequencies in the Kurmi of Central India, as it seems that the LH-specificity may be related to these blood types. The Kurmi have the highest frequency of blood group B (40.67%), followed by the blood group O (29.97%), A (24.16%) and AB (5.20%). When compared with other five caste/religious groups reported from Central India no significant differences were found in any case. The allele frequencies have the order $O > B > A$ in all of them.

The distribution of the LH types with blood group A in the Kurmi of Central India is given in table 3. The Kurmi have the highest frequency (55.70%) of LH+ type than the LH- one (44.30%). No statistically significant differences

were observed when compared with the Brahmin, Bania, Kshatria, Kayasth and Muslim of the same areas.

Table 4 shows the distribution of the LH types with blood group B in the Kurmi of Central India. The Kurmi have the higher frequency (56.39%) for LH+ type than the LH- one (43.61%). Once again, no significant differences were found when compared with other five caste/religious groups of the region reported earlier.

The distribution of the LH types with blood group AB in the Kurmi of Central India is given in table 5. The Kurmi have the highest frequency (64.71%) for LH- type than LH+ one (35.29%). When compared with five caste/religious groups of the same areas, here too, no statistically significant differences were found among them.

Thus, it may be concluded that as for the distribution of the LH and ABO blood mark-

Table 2: Distribution of ABO blood types in the Kurmi and some other populations of Central India

Population	n	Phenotypes				Allele frequencies			Chi-square value with the Kurmi (d.f.=3)	
		O	A	B	AB	A	B	O	χ^2	P
The Kurmi (Present study)	327	98 (29.97)	79 (24.16)	133 (40.67)	17 (5.20)	0.1618	0.2681	0.5620		
Brahmin ¹	137	41 (29.93)	34 (24.82)	54 (39.42)	8 (5.84)	0.1694	0.2634	0.5670	0.128	0.98>P>0.99
Bania ¹	115	33 (28.70)	24 (20.87)	44 (38.26)	14 (12.17)	0.1805	0.2940	0.5254	6.455	P>0.05
Kshatria ¹	77	20 (25.97)	22 (28.57)	28 (36.36)	7 (9.09)	0.2124	0.2639	0.5226	2.713	0.30>P>0.50
Kayasth ¹	45	8 (17.78)	15 (33.33)	17 (37.78)	5 (11.11)	0.2596	0.2906	0.4494	5.802	0.10>P>0.20
Muslim ¹	48	10 (20.83)	17 (35.42)	17 (35.42)	4 (8.33)	0.2554	0.2554	0.4886	4.302	0.20>P>0.30

¹Koley and Shrivastava (1992)

Figures in paranthesis are percentages

Table 3: Distribution of the LH types with blood group A in the Kurmi and some other populations of Central India

Population	N	LH ⁺ Types		LH ⁻ Types		Chi-square value with the Kurmi (d.f.=1)	P
		Number Observed	% Observed	Number Observed	% Observed		
The Kurmi (Present study)	79	44	55.70	35	44.30	-	-
Brahmin ¹	34	18	52.94	16	47.06	0.073	0.70>P>0.80
Bania ¹	24	13	54.17	11	45.83	0.017	0.80>P>0.90
Kshatria ¹	22	11	50.00	11	50.00	0.225	0.50>P>0.70
Kayasth ¹	15	06	40.00	09	60.00	1.248	0.20>P>0.30
Muslim ¹	17	09	52.94	08	47.06	0.064	0.80>P>0.90

¹Koley and Shrivastava (1992)

Table 4: Distribution of the LH types with blood group B in the Kurmi and some other populations of Central India.

Population	N	LH ^a Types		LH Types		Chi-square value with the Kurmi (d.f. = 1)	P
		Number observed	% Observed	Number observed	% Observed		
The Kurmi (Present study)	133	75	56.39	58	43.61		
Brahmin ¹	54	36	66.67	18	33.33	1.685	0.10>P>0.20
Bania ¹	44	30	68.18	14	31.82	1.907	0.10>P>0.20
Kshatria ¹	28	16	57.14	12	42.86	0.004	0.90>P>0.95
Kayasth ¹	17	09	52.94	08	47.06	0.051	0.80>P>0.90
Muslim ¹	17	11	64.71	06	35.29	0.422	0.50>P>0.70

¹Koley and Shrivastava (1992)**Table 5:** Distribution of the LH types with blood group AB in the Kurmi and some other populations of Central India

Population	N	LH ^a Types		LH Types		Chi-square value with the Kurmi (d.f. = 1)	P
		Number observed	% observed	Number observed	% observed		
The Kurmi (Present study)	17	06	35.29	11	64.71		
Brahmin ¹	08	04	50.00	04	50.00	0.490	0.30>P>0.50
Bania ¹	14	05	35.71	09	60.29	0.000	-
Kshatria ¹	07	03	42.86	04	57.14	0.121	0.70>P>0.80
Kayasth ¹	05	02	40.00	03	60.00	0.036	0.80>P>0.90
Muslim ¹	04	02	50.00	02	50.00	0.302	0.50>P>0.70

¹Koley and Shrivastava (1992a)

ers, not much population differentiation has occurred in Central Indian populations under the influence of a rigid caste system, religious obligations and mating restrictions. However, when the present samples were compared with North Indian (studied by Sehajpal and Shrivastava, 1981) and South Indian (studied by Reddy et al., 1981) populations, some significant differences were found. Thus, the LH system could be useful in population variation studies, particularly in association with the ABO system.

KEY WORDS The Kurmi. LH Types. ABO Types. Polymorphism. Central India.

ABSTRACT Data are presented on the distribution of the LH and ABO blood types in the Kurmi of Central India. The results indicate no significant differences in the distribution of both the blood markers compared with some endogamous populations of the same area.

Authors' Address: Shyamal Koley and Jaspal Singh Sandhu, Department of Sports Medicine and Physiotherapy, Guru Nanak Dev University, Amritsar 1430 05, Punjab, India

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