

A₁A₂BO and RH (D) Blood Groups of Abujhmaria— A Primitive Tribe of Madhya Pradesh, India

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ABSTRACT Blood group [A₁A₂BO and Rh (D)] survey was conducted among Abujhmaria, a primitive tribe of India inhabiting Bastar district of Madhya Pradesh state. The tribe exhibited preponderance of blood group O (35.32%) followed by that of B and A, and quite a low incidence of Rh^{neg} (1.18%).

INTRODUCTION

Situated between latitudes 19.0' and 20.0' N and longitudes 80.39' and 81.39' E, and spread over about 3,900 sq. km, the Abujhmarh is a distinct natural south-west part of Bastar district of Madhya Pradesh. The area is inhabited by an ethnically homogenous population—Abujhmaria. It is an identified primitive tribe of India with a population of 17,016 in Madhya Pradesh (M.P.) (A.D.A Report, 1993). The tribe has remained isolated from mainstream and modernization and depend almost entirely on natural resources for its subsistence. The dialects spoken by Abujhmaria belong to the Dravidian family of language and is similar to Gondi.

In the present paper data on two genetic systems, i.e. A₁A₂BO and Rh(D) blood groups of the Abujhmaria of Bastar are reported.

MATERIAL AND METHODS

For the present study the data were collected from seven villages namely Kundla, Gongla, Sonpur, Becha, Kihkad, Kohkameta and Mur-nar of Abujhmarh region of Bastar in the months of October and November, 1993. A total of 337 not closely related Abujhmaria subjects were tested for the A₁A₂BO and Rh(D) blood groups by open slide method using anti-

A, anti-A₁, anti-B and anti-D sera supplied by Decruz Company, Bombay. The allele frequency calculations were done after Mourant et al. (1976).

RESULTS AND DISCUSSIONS

The phenotype and allele frequency distribution of the A₁A₂BO and Rh(D) blood groups of Abujhmaria is shown in table 1.

Table 1 : The phenotype and allele frequency distribution of the ABO and Rh(D) blood groups among the Abujhmaria

System/ Pheno- type	Number Observed	Fre- quency observed	Number Allele expected	Frequency
ABO				
A	77	22.85	93.0	A 0.208
B	90	26.70	106.0	B 0.232
O	119	35.32	105.6	O 0.560
AB	51	15.13	32.5	
Total	337	100.00	337.1	1.000
$\chi^2 = 1.22$, d.f. = 1, $0.30 > p > 0.20$, D/G = 3.94				
Rh(D)				
Rh (D) ⁺	333	98.82		D 0.891
Rh (D) ⁻	4	1.18		d 0.109
Total	337	100.00		1.000

The Abujhmaria exhibited a preponderance of blood group O (35.32%) followed by that of B (26.70%) and A (22.85%). There is no significant difference between observed and expected phenotypic numbers in this system ($\chi^2 = 1.22$; d.f. 1; $0.30 > p > 0.20$). The frequency of the O allele was found to be highest, followed by the frequencies of the B (0.232) and A (0.208) alleles. Significant heterogeneity observed in the ABO system among Abujhmaria

indicates that this tribe is not in genetic equilibrium for this blood group system ($D/\sigma = 3.94$).

When compared with other tribal populations of Madhya Pradesh (M.P.), it was found that Abujhmaria showed close affinities with Northern Dhurwa (Negi and Ahmad, 1963), San Bhatra and Manjhle Bhatra of Bastar (Negi and Ahmad, 1962), Bison-horn Maria of Bastar (Negi, 1963), Gond of Bilaspur (Negi, 1963), Khairwar of Sarguja (Kumar and Kumar, unpublished), Oraon of Sarguja (Kumar et al., 1980), Korwa of Sarguja (Kumar and Rao, Unpublished), Kodaku of Sarguja (Banerjee and Dhar, 1982), Bhilala of Dhar (Kumar, 1966), Maria Gond of Bastar (Macfarlane, 1941), Bhatra and Raj Gond of Indore (Sharma, 1968) and Pardhan of Mandla (Ahmad and Choudhary, 1980).

Of the ten sub-groups of Gonds of other parts of M.P. reported so far, only Bison-horn Maria of Bastar and Gond of Bilaspur (Negi, 1963), Maria Gond of Bastar (Macfarlane, 1941) and Raj Gond of Indore (Sharma, 1968) showed non-significant differences with Abujhmaria, while the remaining groups (eastern and western Muria of Bastar by Negi and Ahmad, 1962; Hill Maria of Bastar by Negi, 1963; Maria of Bastar by Sarkar, 1950; Gond of Raipur, Ambikapur and Sarguja by ICMR, Unpublished) showed significant differences. Hence all groups of Gonds studied so far are not genetically similar with regard to the distribution of the ABO blood groups. The regional variation in allele frequencies seems to be greater than the variation between castes and tribes or religious groups in one region. Mourant et al. (1976) has rightly remarked that ABO frequencies show marked tendency to small local variation even within the limits of quite small countries as compared with Rh and MN blood groups. It is probable that this is due to a greater susceptibility of the ABO phenotypes with regard to varying environmental conditions. Thus the selective influence

on the ABO groups may contain a considerable environmental component.

The subtype A_2 of A blood group occurs with a lower frequency in Indian population than in European populations, the frequency of A_2 allele does not exceed 2.5% in India. Its absence among the Abujhmaria is in conformity with the general trend of Indian population.

Abujhmaria showed quite low incidence of the Rh negatives (1.18%). The frequency of the d allele was found 0.109 which is well within the range of average d allele frequency of M.P. (from 0.087 to 0.696). In general, d allele shows lower frequency in tribals than in non-tribals of M.P.

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REFERENCES

- A.D.A. Report. : *Abujhmar in depth and Five Year Plan (1993-1998)*. Report of Abujhmar Development Agency (1993).
- Ahmad, S.H. and Choudhary, D. : ABO blood groups and sickle cell trait among the Pardhans of Mandla district. *Man in India*, 60 : 235-244 (1980).
- Banerjee, M.K. and Dhar, P. : Distribution of A_1A_2BO blood groups among the Kodaku and Pando of Sarguja district (M.P.). *J. Ind. Anthropol. Soc.*, 17: 75-77 (1982).
- Bhatia, H.M. and Rao, V.R. : *Genetic Atlas of Indian Tribes*. Institute of Immunohaematology (ICMR), Bombay (1986).
- ICMR : *Reports of the Tribal Studies in Jhabua, Ratlam, Ambikapur, Raipur Districts of Madhya Pradesh, Ranchi District of Bihar*. Anthropology Unit, Institute of Immunohaematology, Bombay (Unpublished). cited from Bhatia, H.M. and Rao, V.R. (1986).

- Kumar, N. : ABO blood group and sickle cell trait distribution in Malwa, Western M.P. *J. Ind. Anthropol. Soc.*, 1: 120-140 (1966).
- Kumar, N., Banerjee, M.K. and Gandhi, L.P. : Distribution of A₁A₂BO blood groups, ABH secretion in saliva and sickle cell trait among the Oraons of M.P. *J. Ind. Anthropol. Soc.*, 15: 211-213 (1980).
- Kumar, N. and Kumar, S. : A₁A₂BO blood groups among the Khairwars of Sarguja district, M.P. (Unpublished), cited from Banerjee, M.K. and Dhar, P. (1982).
- Kumar, N. and Rao, V.R. : A₁A₂BO blood groups among the Korwas of Sarguja district, M.P. (Unpublished), cited from Banerjee, M.K. and Dhar, P. (1982).
- Macfarlane, E.W.E. : Blood groups among Balahis (weavers), Bhils, Korkus and Mundas with a note on Pardhis and aboriginal blood types. *J. Roy. Asiatic Soc. Bengal*, 7:15-24 (1941).
- Majumder, P.P. and Roy, J. : Distribution of ABO blood groups on the Indian subcontinent : A cluster analytic approach. *Curr. Anthropol.*, 23: 539-560 (1982).
- Mitra, M., Bajpai, H.R., Narang, S. and Kumar, P.V. : Expected incidence rate of haemolytic disease of the new born in populations of Madhya Pradesh with special reference to primitive Kamar tribe. *J. App. Pop. Studies* (communicated) (1994).
- Mourant, A.E., Kopec, A.C. and Domaniewska-Sobczak, K.: *The Distribution of The Human Blood Groups and Other Polymorphisms*. Oxford University Press, London, 2nd Edition (1976).
- Negi, R.S.: ABO blood groups, sickle cell trait and colourblindness in the Maria of Bastar and Gond and Kanwar of Bilaspur, *Bull. Anthropol. Surv. India*, 12: 149-153 (1963).
- Negi, R.S. and Ahmad, S.H.: The Bhatra, Muria and Mahra of Bastar, A blood group genetic study. *Bull. Anthropol. Surv. India*, 11: 201-209 (1962).
- Negi, R.S. and Ahmad, S.H. : A Study of A₁A₂BO, MN and Rh blood groups, ABH secretion in the Dorla and Dhurwa of Bastar. *Bull. Anthropol. Surv. India*, 12: 21-29 (1963).
- Sarkar, S.S., 1950 cited from Majumder, P.P. (1980).
- Sharma, J.C.: Convergent evolution in the tribes of Bastar. *Am. J. Phys Anthropol.*, 28: 113 (1968).