

A Genetical Study among the Dibongiya Deuri of Lakhimpur District of Assam

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ABSTRACT A genetical study of the Dibongiya Deuri was carried out with a view to understanding the genetic differentiation within and between the Deuri groups of Assam. It is found the various segments of the Deuri are by and large homogeneous in respect of the ABO and Rh (D) blood groups as well as colour blindness. In comparison with other populations, the Dibongiya Deuri are closer to the Koch rather than to the Tengapaniya and Chutiya of the same ethnic group. Such genetic affinities and variations are suggestive of the action of various evolutionary forces.

INTRODUCTION

The Deuri are a Scheduled Tribe of Assam, who speak a language which belongs to the Tibeto-Burman family. It is known that the Deuri population is one of the four divisions of the Chutiya who had ruled over Eastern Assam before the arrival of the Ahom (Das, 1981; Barua, 1996). The other three divisions of the Chutiya are known as Hindu Chutiya, Ahom Chutiya and Borahi. Danker-Hopfe et al. (1988) have reported that the Deuri and Chutiya belong to the same ethnic group, but they are different from each other in respect of quantitative and qualitative traits. It may be noted that the Deuri is again segmented into four different *Khels*, namely, Tengapaniya, Borgoniya, Dibongiya and Patorgoniya. Saikia (1976) has reported that the Patorgoniya Deuri have almost become extinct. Sengupta and Chetry (1994) are of the opinion that each of these Deuri segments has acquired a separate identity. They have observed that inter-marriage between the Deuri groups is not restricted, but such a marriage is quite infrequent.

The present study was carried out among the Dibongiya Deuri with a view to understanding the genetic variation within this population

as well as between the Dibongiya Deuri and some other Mongoloid populations of Assam, taking into consideration the ABO and Rh (D) blood groups as well as phenylthiocarbamide (PTC) taste sensitivity and colour blindness.

MATERIAL AND METHODS

The present study was based on the data collected from Bahgorch village of Dibongiya Deuri in Lakhimpur district of Assam. Data on blood groups and PTC taste sensitivity were collected from 155 unrelated adults (80 males and 75 females), whereas data on colour blindness were based on a sample of 255 individuals, of which 133 were males and 122 females. No attempt was made to apply any statistical sampling technique for the selection of the present sample at both village and individual levels.

Blood groupings were done on slides, following the standard slide method suggested by Lawler and Lawler (1951) and Bhatia (1977). The taste sensitivity to PTC in different threshold levels was determined by serial dilution method of Harris and Kalmus (1949). Ishihara (1960) colour plates numbered 1-38 were used in adequate day-light for the detection of red-green colour blindness.

RESULTS AND DISCUSSION

The frequency distribution of the ABO blood groups and their allele frequencies are given in table 1. It can be seen that the phenotypic frequencies of O, A, B and AB blood groups are 34.84%, 34.84%, 20.65% and 0.68%, respectively, and the frequencies of A, B and O alleles are 0.2537 ± 0.0267 , 0.1644 ± 0.0220 and 0.5819 ± 0.0205 , respectively. The test of goodness of fit indicates that this population is in

genetic equilibrium in respect of the ABO blood groups system ($\chi^2 = 0.56$, $P > 0.05$). Table 1 also shows that the frequency of the Rh- blood group among the Dibongiya Deuri is 1.29% and the frequency of *D* and *d* alleles 0.8864 ± 0.0499 and 0.1136 ± 0.0499 , respectively. The χ^2 value (0.25, $P > 0.05$) indicates that the present population is in genetic equilibrium with regard to the Rh system also.

With respect to ability to taste PTC, it is found that the frequency of tasters is 61.94% and that of non-tasters 38.06%, with the antimode falling on 6. It is true for both sexes of the population. Therefore, the frequencies of taster (*T*) and non-tasters (*t*) alleles are found to be 0.3830 ± 0.0361 and 0.6170 ± 0.0316 , respectively. As far as sex dimorphism is concerned, table 1 shows that the frequency of non-tasters is lower in females (34.67%) than in males (41.25%), despite the absence of statistical significance ($\chi^2 = 0.72$, $P > 0.05$).

the Dibongiya (Sengupta and Chetry, 1994) and Tengapaniya (Das et al., 1985) Deuri of Dibrugarh district. In fact, the Dibongiya Deuri of the present study are also similar to several other Mongoloid populations of Assam, viz., Chutiya, Mishing, Moran (Das et al., 1985) and Koch (Sengupta, 1991). Likewise, the present finding on Rh- (1.29%) is more or less similar to those reported for the Mikir and Rajbanshi (Das et al., 1980). Of course, the Rh- (*d*) allele is either absent or present in a very low frequency among the Mongoloid populations.

In contrast to the ABO and Rh blood groups, the Dibongiya Deuri deviate significantly from the Chutiya ($\chi^2 = 4.03$, $P > 0.05$) and Tengapaniya ($\chi^2 = 4.64$, $P < 0.05$) Deuri (Das et al., 1985) in respect of the ability to taste sensitivity may be related to geographical distance, as it is theoretically known that the breeding size of a population is confined to a certain boundary, but not to the whole area of the population

Table 1: Phenotypic and allele distribution of four genetic markers

Genetic marker	Phenotype	Frequency		Allele frequency
		No. Obs.	Per cent	
ABO Blood Groups	O	54	34.84	<i>O</i> = 0.5819 ± 0.0305
	A	54	34.84	<i>A</i> = 0.2537 ± 0.0267
	B	32	20.65	<i>B</i> = 0.1644 ± 0.0220
	AB	15	9.68	$\chi^2 = 0.5626$, $P > 0.05$
Rh Blood Groups	Rh+	153	98.71	<i>D</i> = 0.8864 ± 0.499
	Rh-	2	1.29	<i>d</i> = 0.1136 ± 0.499 $\chi^2 = 0.2521$, $P > 0.05$
PTC Taste Ability				
Male (n = 80)	Tasters	47	58.75	<i>T</i> = 0.3577 ± 0.0428
	Non-tasters	33	41.25	<i>t</i> = 0.6423 ± 0.0428
Female (n = 75)	Tasters	49	65.33	<i>T</i> = 0.4112 ± 0.0539
	Non-tasters	26	34.67	<i>t</i> = 0.5888 ± 0.0539
Total (n = 155)	Tasters	96	61.94	<i>T</i> = 0.3830 ± 0.0316
	Non-tasters	59	38.06	<i>t</i> = 0.6170 ± 0.0316 $\chi^2 = 0.7125$, $P > 0.05$
Colour Blindness				
Male (n = 133)	Normal	132	99.25	
	Colourblind	1	0.75	
Female (n = 122)	Normal	122	100.00	

As far as the present study is concerned, on colour blind individual has been detected, except one case (*i.e.*, 0.75%) in males, who had a red-green colour vision deficiency.

The distribution of the ABO blood groups among the Dibongiya Deuri of the present study is not statistically different from those among

(Gould, 1960; Basu, 1969; Khongsdier and Ghosh, 1994, 1996). We hope that future studies will provide much more comprehensive idea about the on-going process of micro-evolution in all segments of the Deuri, taking into consideration the demographic parameters as well as more genetic markers.

In fine, it is expected that the Dibongiya, or Deuri as a whole, are similar to the Chutiya since the former are known as one of the sub-groups of the latter. However, the present findings on the ABO blood groups and PTC taste sensitivity indicate that the Dibongiya Deuri deviate significantly from the Chutiya. Instead, the present population is more related to the Koch (Sengupta, 1991) and the Ahom (Sengupta and Dutta, 1980; Das et al., 1985). It may be possible that these similarities are associated with the action of other evolutionary forces in each of these populations, which brings about independent differences, or sampling variation in allele frequencies. Presumably, this would mean that sampling error in allele frequencies do not only differentiate the populations of the same ethnic group, but also bring about similarity between populations of a different ethnic group.

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