PRINT: ISSN 0970-9274 ONLINE: 2456-6608
J. Hum. Ecol., 8(6) : 481-483 (1997)
DOI: 10.31901/24566608.1997/08.06.14

# A Note on Some Morpho-genetic Variables Among the Dalu of Meghalaya

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**KEY WORDS** Morpho-genetic Traits. Dalu. Meghalaya. Population Variation.

**ABSTRACT** Morpho-genetic traits such as earlobe attachment, mid phalangeal hair, relative lengths of toes, hand clasping, arm folding, tongue rolling and tongue folding of the Dalu of Meghalaya are reported. The results of the present study are compared with other populations in order to assess the group difference or similarities. The present Dalu sample stand significantly apart from most of the populations under consideration.

Although comprehensive morphological studies on few numerically dominant tribal populations in Meghalaya are now available, the studies on morpho-genetic as well as behavioural traits like earlobe attachment, middle phalangeal hair, relative lengths of toes, hand clasping, arm folding, tongue rolling and tongue folding etc. on many of them are conspicuous by their absence. Genetic mechanism of these traits is still not clearly understood, but, they are seen to occur with variable frequency in different populations and as such are useful in evaluating and analysing evolutionary forces and classification as well.

In an earlier communication ( Borthakur et al., 1997), we have already examine the genetic features of the Dalu of Meghalaya, using ABO blood groups, Rh factor, PTC taste sensitivity and colour blindness. In the present note an attempt has been made to report the frequency occurrance of few above mentioned morpho-genetic markers among the Dalu.

The Dalu is numerically small pupulation of Meghalaya who migrated in later part of the 17th century from Manipur to the Garo Hills. Nowadays they are mostly concentrated in Quillapara, and Dalupara of west Garo Hills, Meghalaya. They are also found in Nowgong district in the neighbouring States of Assam.

## MATERIAL AND METHOD

The data were collected from 145 unrelated Dalu individuals - 64 males and 81 females - from the vilage Quillapara, Barengapara, Choipani, and Duttapara in west Garo hills district, Meghalaya by one of us (P.B.). In recording and analysing various morpho-genetic traits various standard techniques were employed in the present study.

Lut'z (1908) technique for observation of hand clasping was followed while the type of arm folding was categorised following Weiner (1932). For tongue rolling and tongue folding, a person was classified as positive or negative depending upon his / her ability to turn up the lateral edges of the tongue (Sturtevant, 1940) and folding of the tongue tip (Hsu, 1948). The twofold classification of earlobe attachment of Powell and Whiteney (1937) was followed. The presence or absence of hair on the mid-digit was recorded with the help of a magnifying glass. The length of the toes, I$^{st}$ and II$^{nd}$ were recorded after eye-estimation and categorised following Minami (1952).

## RESULTS AND DISCUSSION

It is found that the attached earlobe is more common in both the sexes, being 76.56 per cent in males and 77.78 per cent in females. Significance test for sex homogeneity however fail to record any significant variation ($\chi^2 = 0.03$, d.f. $= 1$; $p > 0.05$). Remarkable similarity in the two sexes with regard to this trait also observed ear-

lier and relative smaller sex difference can be expected in relatively more homogenous populations. The chi-square values with regard to the frequency of attached earlobe, the Dalu (77.24%) differ significantly from the Meitei (50.30%, $\chi^2 = 33.61$, Chakravarty, 1986; 50.50%, $\chi^2 = 18.19$, Singh and Malhotra, 1970; 31.63%, $\chi^2 = 72.06$, Singh, 1978), Kabui (48.19%, $\chi^2 = 34.73$, Chakravarty, 1986; 51.0%, $\chi^2 = 24.55$, Singh, 1987 ; 57.50%, $\chi^2 = 17.10$, Manibabu et al., 1987), Tangkhul (38.61%, $\chi^2 = 50.83$, Singh, 1982 ; 60.83%, $\chi^2 = 11.31$, Chakravarty, 1986), Andrha (65.81%, $\chi^2 = 5.57$, Singh, 1978), Khangabok (19.42%, $\chi^2 = 115.88$, Singh, 1978), Maram Naga (63.81%, $\chi^2 = 7.86$, Manibabu, 1994) and Mao Naga (60.51%, $\chi^2 = 10.61$, Manibabu, 1994) and Payeng (59.40%, $\chi^2 = 13.71$, Manibabu and Sunitibala, 1985), but not from either the Garo (73.00%, $\chi^2 = 0.78$, Das, 1967) or the Hajong (69.46%, $\chi^2 = 2.91$, Barua, 1985).

The occurrence of mid phalangeal hair among the female (38.27%) is higher than that in male (32.81%). However, chi-square value shows that there is no significant difference between two sexes in respect to this character ($\chi^2 = 0.46$, d.f. = 1, $p > 0.05$). Test of significance also brings out similarity in the incidence of mid phalangeal hair between the Dalu (35.86%) and each of Khynriem (34.75%, $\chi^2 = 0.05$), Pnar (36.00%, $\chi^2 = 0.0$), War (30.00%, $\chi^2 = 0.54$) and Bhoi (28.85%, $\chi^2 = 0.82$), all Khasi-sub populations studied by Mukherjee (1964) as well as Meitei (40.00%, $\chi^2 = 0.53$) studied by Mukherjee and Singh (1977).

With regard to relative length of 1st and 2nd toes among the Dalu, prevalence of type F (male 50.0%, female 50.62%) followed by type T (male 35.94%, female 43.21%) and low incidence of type O (male 14.06%, female 6.17%) is a marked feature. However, no significant difference exists in foot types between sexes ($\chi^2 = 2.78$, d.f. = 2, $p > 0.05$). Among the Khasi, the frequency of type T overwhelmingly predominates (T = 81.77%, F = 7.62%, O = 10.59%, Das and Uzir, 1961; T = 84.82%, F = 9.83%, O = 5.34%, Das, 1980). Test of significance also reveals that in respect of this morphological trait, the Dalu is in no way resemble with the neighbouring Khasi tribe ($\chi^2 = 102.49$, Das and Uzir, 1961; $\chi^2$ 213.90, Das, 1980).

Considering the sex, it is observed that in the Dalu the incidence for the ability to roll and fold the tongue is higher in females than the males (Table 1). With regard to hand clasping and arm folding, the right hand or

**Table 1 : Percentage distribution of morpho-genetic variables in some selected population groups of North East India**

| *Population* | *No.* | *Tongue rolling* | *Tongue folding* | *Hand clasping* | *Arm folding* | *Reference* |
|---|---|---|---|---|---|---|
| | | *Positive* | *Positve* | *R>L* | *R>L* | |
| Dalu | 145 | 20.69 | 20.07 | 69.66 | 68.28 | Present study |
| Khasi | 201 | - | - | 69.15 | 36.19 | Das & Barua, 1974 |
| Khangabok-Heirok | 272 | - | - | 56.90 | 49.50 | Singh, 1973 |
| Meithei | 214 | - | - | 64.00 | 56.90 | Singh & Malhotra, 1971 |
| Meithei | 160 | - | - | 70.00 | 32.50 | Singh, 1973 |
| Meithei | 504 | 55.16 | - | 64.09 | 41.67 | Chakravarty, 1986 |
| Kabui | 341 | - | - | 68.60 | 40.20 | Manibabu et al., 1987 |
| Kabui | 336 | 54.76 | - | 51.90 | 36.12 | Chakravarty, 1986 |
| Andro | 234 | - | - | 70.50 | 31.24 | Singh 1978, |
| Tangkhul | 269 | 52.79 | - | 53.90 | 47.70 | Chakravarty, 1986 |
| Payeng | 304 | - | - | 70.39 | 33.88 | Manibabu & Sunitibala, 1985 |
| Maram Naga | 195 | - | - | 66.67 | 35.38 | Manibabu, 1994 |
| Mao Naga | 268 | - | - | 65.67 | 33.96 | Manibabu, 1994 |

arm over left is the usual one. The bisexual differences are, however, without exception statistically not significant. It is also apparent from the table that right type of hand clasping is prevalent with highest frequency among the Andro (70.50%, Singh, 1978) which is closely followed by Payeng (70.39%, Manibabu and Sunitibala, 1985). Like them the Dalu (69.66%), Meitei (70.00%, Singh, 1973) and Khasi (69.15%, Das and Barua, 1974) also show almost similar incidence. Right type of arm folding is the common feature only in Dalu (68.28%) and Meithei (56.90%, Singh and Malhotra, 1971) and differ from the other pupulation who show left type of arm folding with high frequency. The present findings could not be compared to draw any inference as no studies on incidence of tongue rolling and tongue folding has so far been undertaken among the tribal population of Meghalaya and Manipur.

Our assessment of the morpho-genetic relationship between the Dalu with other population support the observation made earlier (Borthakur et al., 1997). The Dalu seem to be a distinctly different population and in a larger number of characters, the Dalu show a great deal of variation.

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