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CASTE VARIATION IN THE DISTRIBUTION OF PLACENTAL GoT TYPES AMONG A FEW CASTE GROUPS OF ANDHRA PRADESH

B. RAMESH BABU, S. ANITHA KUMARI AND N. SREE RAM KUMAR
DEPARTMENT OF ZOOLOGY, OSMANIA UNIVERSITY
COLLEGE FOR WOMEN, KOTI, HYDERABAD, INDIA.
(e-mail : anitha _shinde2001@yahoo.com)

A total of 1622 placental samples belonging to Brahmins (280), Vysyas (196), Muslims (294) and Scheduled Caste (852) groups living in Andhra Pradesh, South India were studied electrophoretically for the distribution of either mitochondrial or soluble GoT types. No variants of the soluble form of GoT were found. However, 2 samples in Vysya, 3 samples in Muslim groups (2 in Shia and 1 in Khoja) and 2 samples among the Scheduled Caste groups (1 in Mala and 1 in Paky) were found to display a triple banded pattern representing the GoT_M 2 -1 phenotype.

Key words: Placenta, Electrophoresis, GoT, Phenotype.

INTRODUCTION

The enzyme Glutamate oxaloacetate transaminase (GoT) catalyses the reversible conversion of aspartate and α-ketoglutarate to oxaloacetate and glutamate. The enzyme occurs in two distinct molecular forms, the soluble form (GoTs) migrating anodally and the mitochondrial form (GoT_M). migrating cathodally on electrophoresis. (Boyd 1961). Both the forms have been reported to show a few variant phenotypes which are polymorphic in a few populations.

The literature available on the incidence of electrophoretic variants of GoT among the different caste groups of Andhra Pradesh is very scanty. Hence the present study was aimed to determine the distribution of placental GoT types among a few caste groups of Andhra Pradesh.

MATERIALS AND METHODS

1622 placentae were collected from different maternity hospitals of Telangana and Andhra regions of Andhra Pradesh. The placentae were from individuals belonging to Brahmins (280), Vysya (196), Muslims (294) and scheduled castes (852) groups. The electrophoretic screening for GoT isozymes was carried out following essentially the method as described by Sree Ram kumar and Rao (1982). For the electrophoretic study, homogenates were prepared by grinding 1 to 2 gm of placental tissue with an equal volume of distilled water in a teflon homogenizer held in ice. Later the homogenates were centrifuged at 3000rpm for 20 minutes. The clear supernatants were separated and used for electrophoresis.

RESULTS AND DISCUSSION

The distribution of the GoT variants as found in the present investigation in the different caste groups of Andhra Pradesh are shown in Table I.

Table I : Placental Glutamate oxaloacetate transaminase (GoT) phenotypes in different caste groups of Andhra Pradesh.

Population	Number tested	GoT_M Phenotypes	
		1 – 1	2 – 1
Brahmins	280	280	0
Vysya	196	194	2
Shia	101	99	2
Khoja	193	192	1
Madiga	283	283	0
Mala	192	191	1
Paky	162	161	1
Mochi	215	215	0

Davidson et al)1970) found one genetic variant of GoT_S , out of 860 placental extracts from Caucasians, Negroes and peutroricans. Chen & Giblet (1971) described two rare variants of GoT_s2-1, besides the common GoT_S1-1 phenotype. The GoT_S 2 gene was found to be polymorphic in Japanese and American Indians. The first report on the GoT_M polymorphism, however, was that of Davidson et al (1970). They found 3 genetic variants and two of them were subsequently named as GoT_M2-1 and GoT_M3-1 (Hackel et al, 1972). The GoT_M2 allele was found to be polymorphic in Europeans, Negroes and Nigerians. (Davidson et al 1970., Hackel et al, 1972, Ananthakrishnan et al, 1972). GoT_M3 allele was found to be polymorphic about 6 to 7% only in negro populations. In India, the studies on the distribution of GoT polymorphism have been very few and the data available is very scanty. (Sree Ram kumar,N,1980).

In the present investigation, a total of 1622 placental preparations were screened to note the occurrence of any variants either of the soluble or of the mitochondrial form of GoT were found. No variants of the soluble form of GoT were found. All the samples were found to show only a single banded pattern of the soluble form which migrated anodally on electrophoresis. Most placental extracts were found to display a single electrophoretic band of enzyme activity which migrated cathodally and this is the usual mitochondrial form. However, 2 samples in Vysya, 3 samples in Muslim groups (2 in shia and 1 in Khoja) and 2 samples among the scheduled caste groups (1 in Mala and 1 in Paky) were found to display a triple banded pattern representating the GoT_M2-1 phenotype. Whether the different alleles of GoT_S and GoT_M show polymorphism in Indian populations or not cannot be decisively said at present. Further investigations are needed to confirm this fact using different populations from different parts of India.

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