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Polymorphism of human mitochondrial glutamate-oxaloacetate transaminase (m-GOT)—a new allele

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The aim of the present study is to investigate the mitochondrial form of glutamate-oxaloacetate transaminase (m-GOT) in human liver and placental homogenates by the method of horisontal starch gel electrophoresis. The theoretical importance and actuality of this kind of investigations for population genetics are related to the origin of different human populations. By this way it is also possible to characterise more precisely their gene pool. The practical application of results obtained for the purposes of forensic medicine is recommended.

Key words: population genetics, mitochondrial form of enzyme glutamate-oxaloacetate transaminase, liver and placental homogenates, electrophoresis, gene frequencies.

Glutamate-oxaloacetate transaminase (EC 2.6.1.1.) occurs in two distinct subcellular forms: cytoplasmic (s-GOT) and mitochondrial (m-GOT). The both forms of the enzyme are known to show genetic polymorphism independently. In this report we describe for the first time a new genetic variation of m-GOT in the Bulgarian population.

Materials and methods

110 liver extracts from healthy Bulgarian people died of accidents, as well as 80 placental extracts were investigated. All materials were homogenizated and supernatants obtained were kept at —20°C. Horizontal starch gel electrophoresis was carried out with tris-EDTA-boric acid buffer, pH 8,4 for 18 hrs at —4°C, 20 μA, 150 V. The isoenzyme profile was investigated by the formasan method of Dikov and Lolova (1974), in our modification (I a n e v a, H a d j i o l o f f, 1979).

Results and discussion

Each form of the isoenzyme of m-GOT is detected as a sharp single band, as we show on Fig. 1*A* — *1*. m-GOT activity is observed as triple bands in two placental samples and in three samples from the liver (Fig. 1*A—2*; *B—2*). We designated the present variant type as m-GOT 2-1, triple banded heterozygote of m-Got[1] and

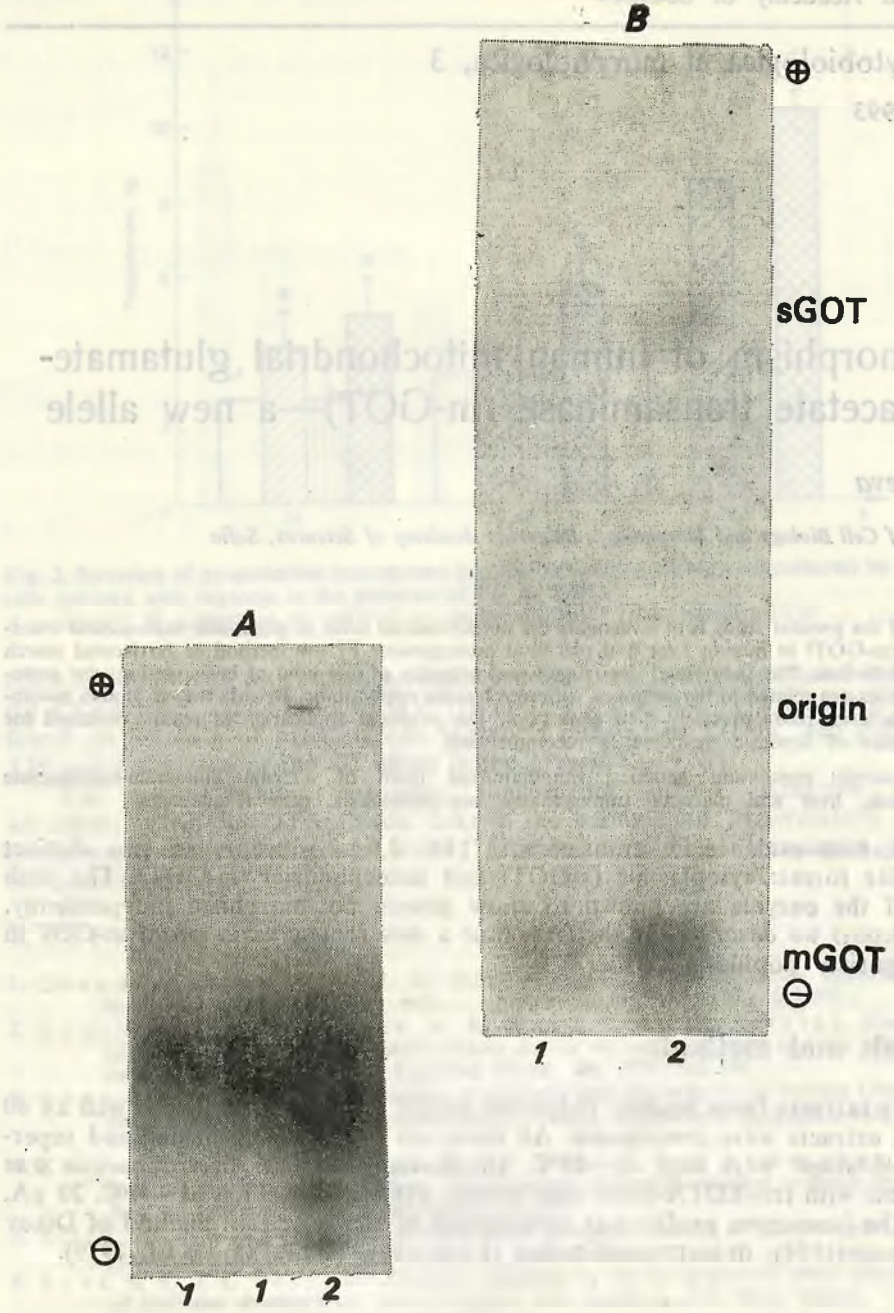

Fig. 1. GOT phenotypes of placental samples (*A*) and of liver homogenates (*B*) on the starch gel

m-Got^2 alleles. The frequency of this variant is 3 out of 110 liver samples, and the estimated allele frequency for the m-Got^2 in the observed Bulgarian population is 0,0136 (m-Got^2=0,0136). The data of the frequencies of the m-GOT in various populations are presented in Table 1.

Table 1. Frequency of the alleles of m-GOT

Population	m-Got[1]	m-Got[2]	m-Got[3]	Author
Europeans	0,983	0,017	0,000	Hackel et al. [2]
Negrous	0,961	0,000	0,040	
Indians	1,000	0,000	0,000	
Germans	0,993	0,007	0,000	Ananthakrishnan et al. [1]
Chinese	0,9947	0,0053	0,000	Teng et al. [4]
Malaysians	0,9946	0,0054	0,000	
Japanese	0,9957	0,0043	0,000	Toyomasu et al. [5]
Bulgarians	0,9986	0,0136	0,000	Ianeva, 1992

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