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A Rare Phosphoglucomutase Phenotype: PGM_1 6–1

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Summary: In paternity determination a rare erythrocyte phosphoglucomutase variant: PGM_1 6-1 has been found in a Turk. Whereas the mother of the child had the phenotype PGM_1 1 the same variant was detected in the child suggesting a rather high probability of paternity.

Zusammenfassung: Im Rahmen einer Vaterschaftsuntersuchung wurde bei dem Beklagten, einem Türken, im Phosphoglucomutase-System der seltene Phänotyp PGM_1 6-1 nachgewiesen. Während die Kindesmutter den Phänotyp PGM_1 1 aufwies, besaß das Kind ebenfalls die PGM_1-Variante des Propositus, was den Nachweis der Vaterschaft mit einer außerordentlich hohen Wahrscheinlichkeit ermöglichte.

Key words: Phosphoglucomutase - rare PGM-variants - enzyme polymorphism

In a paternity case the isoenzyme pattern of the erythrocyte phosphoglucomutase of the defendant, who was of Turkish origin, exhibited a rare phenotype: using cellulose acetate electrophoresis according to SONNEBORN (1972) two additional isoenzymes could be detected in the area of the PGM_1 locus bands, one isoenzyme occured distinctly below the a-band, another, although more weakly, below the b-band. This isoenzyme pattern has been identified as the phenotype PGM_1 6-1 (Fig. 1). Whereas the mother in this case had the phenotype PGM_1 1, the child had the same PGM_1 6-1 variant like the propositus suggesting a rather high probability concerning paternity. Family investigations of the defendants relatives could not be performed.

HOPKINSON and HARRIS (1966) observed this variant likewise in a Turk from Cyprus. ENG *et al.* (1964) found PGM_1 6-1 four times in blood samples from a total of 427 Chinese and could demonstrate in family studies that the allele PGM_1^6 is inherited as a dominant trait. Recently, HARRIS *et al.* (1974) reported that this phenotype occurred only three times among 10 333 unrelated individuals of European origin; a gene frequency of 0.00014 was calculated. Further investigations may reveal, if the allele PGM_1^6 occurs more often in certain populations like Chineses or, perhaps, Turks.

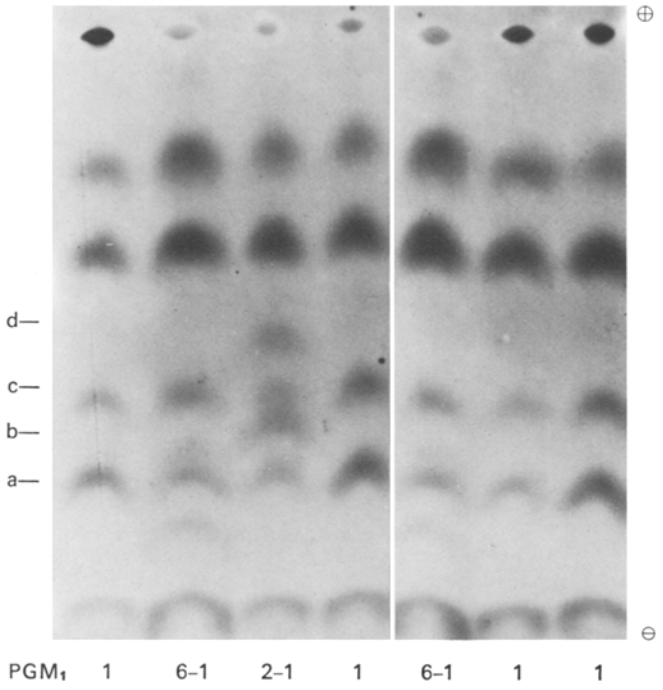

Fig. 1. PGM isoenzyme pattern in cellulose acetate electrophoresis

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