

THE DISTRIBUTION OF HAPTOGLOBIN TYPES IN VARIOUS REGIONS OF TURKEY*

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SUMMARY: Aksoy M, Erdem Ş. (Hematology Unit, Department of Internal Medicine, Istanbul University Faculty of Medicine at Çapa, Istanbul, and the Biology Division of the Turkish Scientific and Technical Research Council, Gebze, Kocaeli, Turkey). The distribution of haptoglobin types in various regions of Turkey. *Turk J Pediatr* 35: 41-43, 1993.

The distribution of haptoglobin (Hp) types and the gene frequencies of Hp1 in various regions of Turkey are discussed. The Hp1 gene frequency ranged between 20.4 percent for Turks living in the eastern part of Turkey and 32.6 percent in those who either are at present living in or have migrated from Western Thrace. Generally, the Hp1 gene frequency in the Turkish population is 26.5 percent, a figure similar to that recorded for Asians. Minor variations in the Hp1 gene frequencies in various parts of Turkey may be assumed to have been caused in certain regions by intermingling with the local populations. *Key words:* haptoglobin, regional distribution, Turkey.

Smithies'¹ discovery that haptoglobins (Hp) undergoing starch gel electrophoresis yielded five distinct patterns led to heightened universal interest in these globins. Furthermore, this characteristic immediately found an application in studies relating to the distribution of Hp types in various populations and ethnic groups. It is well known that data regarding the frequency of occurrence of blood types in a population was formerly used in such studies. However, several investigators have emphasized that Hp typing has proved to be as effective as the former method in these research projects. The distribution of the major types of Hp in various populations living on different continents is quite uniform. We may cite as an example the Hp 1 gene frequency which is between 35 and 45 percent in Europe¹, but generally higher in Africa, ranging between 40 to 87 percent. In contrast to these figures, the Hp 1 gene frequency in the Asian population ranges from 8 to 39 percent. Even though there are some exceptions, the Hp 1 gene frequencies are remarkably similar throughout Europe and Asia.

The distribution of Hp variants in the Turkish population on the whole, and in some regions of Turkey, have been researched since 1966, and the results obtained

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have been published²⁻⁵. The purpose of this paper is to summarize and discuss the results of these studies.

Material and Methods

Haptoglobin typing was determined in the following manner: A total of 919 blood samples were collected from unrelated Turkish people living in various regions of Turkey. Starch gel electrophoresis was carried out on 500 blood samples according to the method devised by Smithies⁶, while the remaining 619 blood samples were subjected to acrylamide gel electrophoresis. Equipment used were the microzone electrophoresis cell and the Kodel 113 acrylamide cell accessory produced by the Spinco Division of Beckman Instruments, Inc, California, U.S.A.

Results and Discussion

As has been documented, the Hp 1 gene frequency in European populations ranges between 34 (in Greece) and 45 percent (in the Basque region of Spain)¹. On the other hand, the Hp gene frequency in Asian populations is lower than the figure recorded in those in Europe, ranging between 7 (in the Irulas tribe in India) and 33 percent (in the Ghasgai in Iran)¹. Naturally there are some exceptions associated with the higher values recorded for the Hp 1 gene frequency in Asians¹. The Hp 1 gene frequency for Turks living in Asia Minor is 26.5 %, which is well within the range recorded for Asians². However, it may be noted that the Hp 1 gene frequency exhibits interesting regional variations among Turks. The Hp 1 gene frequency in 135 Turks living in Antalya, a city on the eastern coast of the Mediterranean, was found to be 26 percent³. A study conducted in 102 apparently healthy Turks selected at random who were either still living in or had migrated from Western Thrace revealed that the frequency of the Hp 1 gene was 32.6 percent, which incidentally was the highest percentage recorded for any Turkish population⁴. This figure can perhaps be explained by assuming that Turks intermingled with other Europeans formerly living in these regions⁴. The authors of this paper, in association with their colleagues, carried out a study on abnormal hemoglobins, beta-thalassemia and Hp 1 gene frequencies among Turks living in Van, a city close to the eastern border of Turkey⁵ and found that the Hp 1 gene frequency was 20.4 percent. This study encompassing 159 Turks living in this region revealed a figure that was the lowest of any region in Turkey.

REFERENCES

1. Giblett ER. *Genetic Markers in Human Blood*. St. Louis: Mosby, 1969, pp 95-100.
2. Erdem Ş, Aksoy M. A note on the distribution of haptoglobin types in Turkey. *Hum Hered* 25:18, 1975.

3. Aksoy M, Dinçol G, Erdem Ş. Haemoglobin variants, beta-thalassemia glucose 6-phosphate dehydrogenase deficiency and haptoglobin types in Turkish people living in Manavgat, Serik and Boztepe (Antalya). *Hum Hered* 30:3, 1980.
4. Aksoy M, Kutlar A, Kutlar F, et al. Survey on haemoglobin variants, beta-thalassaemia, glucose-6-phosphate dehydrogenase deficiency, and haptoglobin types in Turks from Western Thrace. *J Med Genet* 22:288, 1985.
5. Aksoy H, Bayraktar Y, Yüzbaşıoğlu T, et al. Frequencies of abnormal hemoglobins, high A₂ beta-thalassemia and distribution of haptoglobin types in Van and its vicinities. *Doğa* 10:10, 1986.
6. Smithies O. Zone electrophoresis in starch gels: group variations in the serum proteins of normal human adults. *Biochem J* 61:629, 1955.

