

Genetic Polymorphism of Desialyzed Alpha₂ HS-Glycoprotein by Ultrathin Isoelectric Focusing

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Summary. The genetically determined polymorphism of α_2 HS-glycoprotein was analyzed by immunoblotting ultrathin-layer polyacrylamide gel isoelectric focusing in the pH range 4–6.5 and neuraminidase pretreated sera. In a Libyan population sample from Tripoli ($n=110$) three common phenotypes, α_2 HSG 1–1, 2–1, and 2–2, were observed. The allele frequencies were α_2 HSG¹ = 0.8364 and α_2 HSG² = 0.1636. The theoretical exclusion rate in cases of disputed paternity is 11.8%.

Key word: Alpha₂ HS-glycoprotein polymorphism, in a Libyan population

Zusammenfassung. Der genetisch determinierte Polymorphismus des α_2 HS-Glykoproteins wurde mit der isoelektrischen Fokussierung auf einer ultradünnen Schicht von Polyacrylamidgel in einem pH-Bereich von 4–6.5 und anschließenden Immunoblotting von Serumproben nach Behandlung mit Neuraminidase durchgeführt. Bei Libyern aus Tripoli ($n=110$) wurden die drei häufigen Phänotypen α_2 HSG 1–1, 2–1 und 2–2 beobachtet. Folgende Allel-Frequenzen wurden ermittelt: α_2 HSG¹ = 0.8364 und α_2 HSG² = 0.1636. Aufgrund unserer Untersuchungsergebnisse errechnet sich für das α_2 HSG-System eine theoretische Ausschlußchance von 11.8%.

Schlüsselwort: Alpha₂ HS-Glykoprotein-Polymorphismus, Frequenzen bei Libyern

Introduction

The genetic variation of the human serum α_2 HS-glycoprotein (α_2 HSG) was first presented by Anderson and Anderson [1] using two-dimensional electrophoresis. Subsequent investigations [2–10] have shown that the polymorphism of this serum protein is represented by two common and several rare alleles at a single autosomal gene locus.

This study describes the polymorphism of α_2 HSG in Libyans using ultrathin layer polyacrylamide gel electrofocusing and neuraminidase pretreated sera.

Materials and Methods

Serum samples from 110 unrelated Libyans were collected and transported in an ice bag by air and then kept frozen at -70°C until analysis. Desialysation of the sera, isoelectric focusing and immunoblotting were according to our earlier report [11].

Results and Discussion

Figure 1 illustrates the isoelectric focusing and immunoblotting pattern of the three common α_2 HSG phenotypes after neuraminidase treatment of the sera.

Distribution of the encountered phenotypes and allele frequencies are given in Table 1. A complete agreement was found between the observed and expected phenotype values. The observed allele frequencies in Libyans are more or less similar to those reported in Egyptians [10], and markedly different from all other published populations [2–9].

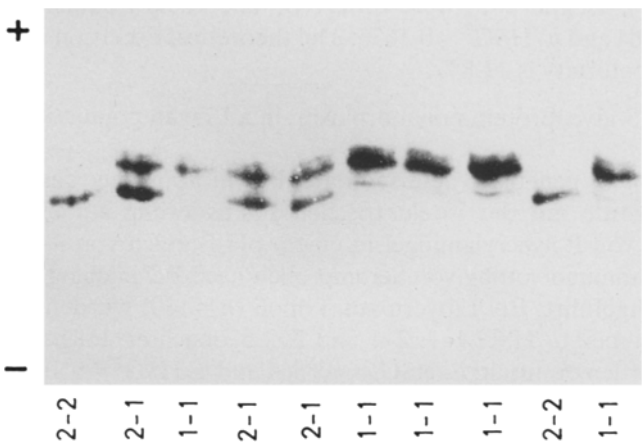


Fig.1. Electrofocusing and immunoblotting pattern of the common α_2 HSG phenotypes (pH 4–6.5)

Table 1. Distribution of α_2 HSG phenotypes and allele frequencies in Libyans

Phenotypes	Observed number	%	Expected number	Allele frequencies
1–1	77	70.0	77	$\alpha_2 \text{ HSG}^1 = 0.8364$
2–1	30	27.3	30	$\alpha_2 \text{ HSG}^2 = 0.1636$
2–2	3	2.7	3	
Total	110	100.0	110	

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