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Determination of Haptoglobin Phenotype In Cardiac and Diabetic Patients

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Abstract

This paper describes the Haptoglobin (Hp) phenotyping in 50 cardiac and 50 types II diabetic serum samples by Native polyacrylamide gel electrophoresis using benzidine/H_2O_2 staining. Different bands of Hp phenotypes were identified on Native PAGE gels by comparing the band patterns with those reported in literature. Results of our studies indicate that all the Hp phenotypes were expressed in both the cardiac and type II diabetic serum samples. However, the percentage for each of the Hp phenotype varied in both the cardiac and type II diabetic serum samples. The highest percentage however, was observed in the case of Hp phenotype Hp2-2(68% and 76% for cardiac and diabetic serum samples respectively).

Keywords: Haptoglobin (Hp); hemoglobin (Hb); Hp phenotypes, Hp1-1, Hp2-1 and Hp2-2; Native-PAGE; Gel staining

Introduction

Haptoglobin (Hp) is an acute phase protein with an important protective role in hemolytic disease. It binds irreversibly to hemoglobin (Hb) and reduces the oxidative and peroxide active potential of free Hb (Lim SKet al., 2001). The major stimulus for its production is interleukin-6 (Oliviero Set al., 1989). The Hp gene is located on the long arm of chromosome 16 (16q22.3) (Robson EBet al., 1969; Magenis REet al., 1970). An allelic polymorphism give rise to two distinct alleles, Hp1 and Hp2, defining three major phenotypes, denoted Hp1-1, Hp2-1 and Hp2-2 (Langlois M Ret al., 1996). Haptoglobin (Hp) is primarily synthesized in the liver and secreted into the plasma. Hp is also produced in other tissues including lung, skin, spleen, brain, intestine, arterial vessels and kidney (D'Armiento et al., 1997; Pelletier et al., 1998; Yang et al., 2000). The normal concentration in human plasma ranges from 0.3-3mg/mL and increases several fold in the occurrence of local or systemic inflammation.