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Antioxidant effect of haptoglobin phenotypes against DNA damage induced by hydrogen peroxide in human leukocytes

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ABSTRACT. Human haptoglobin is classified into three major phenotypes: Hp1-1, Hp2-1 and Hp2-2; there are two autosomal alleles Hp^{*1} and Hp^{*2}, and the Hp^{*1} allele has two subtypes, Hp^{*1F} and Hp^{*1S}. Haptoglobin acts as an antioxidant, preventing hemoglobin-driven oxidative damage. We used the comet assay to examine oxidative damage to DNA induced by hydrogen peroxide in human leukocytes; we also looked for differences in the antioxidant capacity of haptoglobin subtypes. Haptoglobin genotypes were determined through allele-specific polymerase chain reaction, visualized on a polyacrylamide gel. The Hp1-1 genotype had the least DNA damage; this indicates that *Hp* alleles differ in their protective effects against oxidative damage. Among Hp^{*1} alleles, Hp^{*1F} was the most protective.

Key words: Haptoglobin polymorphism; Antioxidant; Hydrogen peroxide; Comet assay

