

## Posttranslational Response to Hydrogen Peroxide of Human Serum Albumin and Its Correction by Some Antimalarial Agents

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### **Abstract**

The molecular mechanisms induced by hydrogen peroxide, as one of the most abundant intermediate of endogenous free radicals, is sensed to blood circulated key transporting proteins, albumins, and the capacity of the antioxidant ability of serum albumins play multiple, key roles as a sensors and regulators of signal transduction and efficacy of drugs in response to hydrogen peroxide. The objective of this study is to assess the relationship between H<sub>2</sub>O<sub>2</sub>-induced oxidative damage of human serum albumin and reduced albumin on pseudoesterase (PEA) and anti-inflammatory activities and action of nonsteroidal anti-inflammatory (NSAID) and antimalarial pharmacological agents.

**Material and Methods:** Changes of PEA of HSA in reduced and H<sub>2</sub>O<sub>2</sub>-induced oxidized forms studies spectrophotometrically with p-nitrophenyl acetate (PNP) converting reaction and screened some compounds for by inhibition of PEA. The in vitro anti-inflammatory activity of the different forms of HSA was evaluated using albumin denaturation technique and ibuprofen and diclofenac were references as a standard.

**Results:** PEA of HSA maintains >65% in the presence of hydroperoxide and occurs pronounced loss in the presence of diclofenac and ibuprofen at high concentration. Based that H<sub>2</sub>O<sub>2</sub>-HSA practically remains PEA of reduced form albumin, the inhibitory effects of Ibuprofen was strongly that inhibitory potential of chloroquine – by 14% and for hydroxychloroquine – by 7% in small concentration Antimalarial drug exhibit significant anti-inflammatory activity not only for reduced form of HSA, but this activity significantly decreased for H<sub>2</sub>O<sub>2</sub>-induced oxidized HSA.

**Conclusion:** Oxidation status of HSA plays important role in the differences of esterase status of the blood and anti-inflammatory activity under presence of antimalarial drugs and NSAIDs. Understanding the antioxidant properties of albumin opens new avenues for therapeutic intervention and sheds light on novel strategies for combating preeclampsia associated with oxidative damage.

