

Co-administration of artemisinin and *Ricinodendron heudelotii* leaf extract—effects on selected antioxidants and liver parameters in male Wistar rats

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Abstract

Startling rate of malaria parasite resistance to artemisinin and its derivatives has led to possible herb–drug antimalarial combination therapy. This study assessed the effect of co-administration of artemisinin and *Ricinodendron heudelotii* extract on certain liver and antioxidant indices in rats. Four groups containing ten rats each were administered distilled water (group A), artemisinin only (group B), artemisinin with *R. heudelotii* extract (group C), and *R. heudelotii* extract only (group D). Serum biochemical values and antioxidant parameters were determined using standard methods respectively. The results revealed that the total protein level increased significantly ($p < 0.05$) in group C. Aspartate aminotransferase (AST) and alanine aminotransferase (ALT) activities increased significantly ($p < 0.05$) in the group administered artemisinin only but was regulated to control level both in groups C and D. The liver reduced glutathione (GSH) concentration decreased in the group administered artemisinin only. Similarly, malondialdehyde (MDA) level significantly increased ($p < 0.05$) in group A while groups C and D showed decrease in MDA and catalase concentrations. Histological examination showed that few of the hepatocytes were necrotic in the group administered artemisinin only while the group administered artemisinin and extract showed mild to moderate central venous congestion and periportal cellular infiltration. The study indicates that the bioactive constituents of the *R. heudelotii* extract might either have a regulatory effect on artemisinin toxicity or synergistically enhance its activity. Such bioconstituents can further be isolated and characterized for drug development to tackle *Plasmodium falciparum* resistance.

Keywords

Ricinodendron heudelotii Euphorbiaceae Artemisinin Antioxidants Histology

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