

# **Antioxidant Activity and Protective Effect of Fluoroquinolones Derivatives in Carbon Tetrachloride Induced Liver Injury in Rats**

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## **Abstract**

Antioxidants are the fighting elements against the damage caused by free radicals. It prevents or slows the oxidation process that initiate illness in human body like cancer, liver and cardiovascular diseases. The safety of available compounds is debatable. In this study, the novel fluoroquinolones derivatives against liver damage were estimated by radical scavenging capability using Diphenyl-2-picryl-hydrazyl (DPPH) assay. Three active hits were selected for screening the reduction of CCl<sub>4</sub> induced hepatotoxicity in 25 male Wistar rats, weighs (200 ± 10) g divided into 5 groups. The reduced series 4 of FQs showed excellent antioxidant properties as scavengers of ROS. The compounds 6e, 6f, 4a have displayed extraordinary in vivo and in vitro hepatoprotective activity suggesting that FQs had protective effects against hepatic oxidative injury. In comparison to the treated group CCl<sub>4</sub>, rats treated with fluoroquinolone compounds had a resulted reduction in ALT levels by (78.3%, 79.6%, and 77.9% respectively), a reduction in AST levels by (73.0%, 70.5%, and 61.6% respectively). Albumin levels restored to its normal by (21.7%, 34.8%, and 34.9 % respectively), TAS levels restored to its normal by (448.6%, 457.1%, and 468.6% respectively), and SOD levels restored to its normal by (142.8%, 168.6%, and 160% respectively). The C-8-C-7 diamine chelators group, lipophilicity, acidity, and size are the key structural features requirements for antioxidant activity of these FQs. Total H-B capability was also essential since it increases the total number of H-B donor /acceptors available for chelation. The role of the acidic 4-oxo-3-COOH group has less significant contribution in the antioxidant activity of these FQs. This research has pointed out the role of iron-chelating diamines groups in antioxidant therapy.

**Keywords:** Antioxidants, Chelation, Fluoroquinolones, Free Radicals.