

Protective role of Quinoxaline derivatives (2,3-Dichloro-6-(trifluoromethoxy)) against doxorubicin-induced nephrotoxicity in rats

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ABSTRACT

Drug-induced nephrotoxicity, remains a major global health concern, driven by toxic injury to proximal tubule epithelial cells and by dose-dependent acute tubular necrosis. Doxorubicin (DOX) used as an anticancer antibiotic in human against various cancers and frequently recognized as a causative agent of drug-induced nephrotoxicity, which outcomes in acute renal injury. The current study 2,3 dichloro-6-(trifluoromethoxy) quinoxaline (DTQ), a quinoxaline derivative, aimed to examine the protective effects against DOX-induced nephrotoxicity. About 30 healthy male Wistar rats were randomly distributed into four groups: control group, DOX only group (15 mg/kg single intraperitoneal injection of DOX on 6th day), and DTQ-30/DTQ-60+DOX group (30/60 mg/kg/day orally DTQ 7 consecutive days and DOX on 6th day). Renal injury was assessed based on the parameter such as kidney function parameters, oxidative stress biomarkers, pro-inflammatory cytokines and related mediator levels and renal histology. DTQ treatment enhanced the kidney function biochemical parameters in DOX-induced rats, remarkably downgrade the oxidative damage marker, pro-inflammatory cytokines and mediator levels, and subdue both apoptosis and pyroptosis processes. The histopathological findings established these outcomes, demonstrating that the antioxidant, anti-inflammatory, and anti-apoptotic properties of DTQ could possibly be used to alleviate nephrotoxicity caused by DOX.

Keywords: *Antioxidant, Anti-inflammatory, Apoptosis, Doxorubicin, Nephrotoxicity, Quinoxaline.*

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