



**Objective:** This work was designed to investigate the effect of Vitamin E and the coenzyme Q10(CoQ10) supplementation on neuroadverse effect by doxorubicin (Dox) in rats. **Methods:** Forty-nine adult Albino rats of both sexes were utilized in this study; animals were randomly enrolled into seven groups of seven animals each. Group I: Control (rats administered corn oil); Group II: Vitamin E at a dose of 100 mg/kg/day for 3 weeks; Group III: CoQ10 at a dose of 50 mg/kg/day for 3 weeks; Group IV: DOX (2.5 mg/kg) intraperitoneally (IP) injected every other day for 2 weeks; Group V: Vitamin E (100 mg/kg/day) orally administered for 3 weeks prior to a DOX 2.5 mg/kg IP injected every other day for 2 weeks; Group VI: Co Q10 (50mg/kg/day) for 3 weeks orally-administered prior to a IP dose of Dox 2.5 mg/kg every other day for 2 weeks. Group VII: Co Q10 (50mg/kg/day), Vitamin E (100mg/kg) for 3 weeks orally-administered prior to a IP dose of Dox 2.5 mg/kg every other day for 2 weeks. Twenty-four hour after the end of the treatment duration, brain of each animal was excised and part of it to be utilized to prepare homogenate for the estimation of caspase-3 (CASP-3), and the remaining part is used for immunohistochemistry examination and to estimate the percent of apoptotic index by terminal deoxynucleotidyl transferase-mediated deoxyuridine triphosphate nick end labeling (TUNEL) assay.

**Results:** Vitamin E and CoQ10 significantly ( $p < 0.05$ ) reduced CASP-3, reduced the percent apoptotic index of TUNEL-assay, and there was an improvement in the immunohistochemistry of rats' brain in Groups V, Group VI, and group VII by reducing number of apoptotic cells compared to Group IV.

**Conclusion:** Both Vitamin E and CoQ10 may have a protective effect against Dox-induced neuroadverse effect in rats.



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: Manal abdulkhaliq ibrahim; Amelioration of neuroadverse effect of doxorubicin with vitamin E and coenzyme Q10 in rats: role of apoptosis; Webinar on Toxicology; October 30, 2020