

# Abstract

Cell Biochem Funct. 2010 Dec 2;28(8):673-7. doi: 10.1002/cbf.1707.

## **N-acetylcysteine modulates doxorubicin-induced oxidative stress and antioxidant vitamin concentrations in liver of rats.**

Koçkar MC, Nazıroğlu M, Celik O, Tola HT, Bayram D, Koyu A.

Department of Internal Medicine, Division of Gastroenterology, Medical Faculty, Süleyman Demirel University, Isparta, Turkey.

**BACKGROUND:** Doxorubicin (DOX) is a chemotherapeutic agent, and is widely used in cancer treatment. The most common side effect of DOX was indicated on cardiovascular system by experimental studies. There are some studies suggesting oxidative stress-induced toxic changes on liver related to DOX administration.

**OBJECTIVE:** The aim of the present study was to evaluate whether antioxidant N-acetylcysteine (NAC) relieves oxidative stress in DOX- induced liver injury in rat.

**METHODS:** Twenty-four male rats were equally divided into three groups. First group was used as a control. Second group received single dose of DOX. NAC for 10 days was given to constituting the third group after giving one dose of DOX. After 10 days of the experiment, liver tissues were taken from all animals.

**RESULTS:** Lipid peroxidation (LP) levels were higher in the DOX group than in control whereas LP levels were lower in the DOX+NAC group than in control. Vitamin C and vitamin E levels were lower in the DOX group than in control whereas vitamin C and vitamin E levels were higher in the DOX+NAC group than in the DOX group. Reduced glutathione levels were higher in the DOX+NAC group than in control and DOX group. Glutathione peroxidase, vitamin A and  $\beta$ -carotene values were not changed in the three groups by DOX and NAC administrations. In histopathological evaluation of DOX group, there were mononuclear cell infiltrations, vacuolar degeneration, hepatocytes with basophilic nucleus and sinusoidal dilatations. The findings were totally recovered by NAC administration.

**CONCLUSIONS:** In conclusion, N-acetylcysteine induced modulator effects on the doxorubicin-induced hepatotoxicity by inhibiting free radical production and supporting the antioxidant vitamin levels.

PMID: 21104935