ORIGINAL ARTICLE

ROLES OF VITAMIN C AND VITAMIN E ON DOXORUBICIN-INDUCED RENAL AND LIVER TOXICITY IN RATS

Yulia Yusri Djabir, Usman, Elly Wahyudin, Sukamto S. Mamada, Ika Reskia N. Hamka, Dila Pramitha S. Putri, Irma Amalia
Faculty of Pharmacy, Hasanuddin University, Makassar, South Sulawesi, Indonesia

Corresponding author:
Yulia Yusri Djabir
Laboratory of Clinical Pharmacy, Faculty of Pharmacy, Hasanuddin University
Makassar, Indonesia
Phone: (+62) (411) 588556
Email: yuliausaha@yahoo.com

ABSTRACT

Introduction: Doxorubicin (DOX) is a chemotherapy agent that has potent effects against various cancer types. However, DOX may elicit renal and liver toxicity. Objectives: To examine the role of vitamin C and vitamin E in reducing DOX renal and liver toxicity. Methods: Male rats (220-330 g) were assigned to one of the treatment groups. Group I was healthy controls. Group II was given DOX (20 mg/kg b.wt). Group III was given vitamin C (250 mg/kg b.wt) for 7 days prior to DOX injection. Group IV was given vitamin E (250 mg/kg b.wt) for 7 days prior to DOX injection. Group V was given oil vehicle for 7 days prior to DOX injection. Results: Vitamin C was effective to reduce both renal and liver dysfunction. However, vitamin E protective effects were only convincing in lowering DOX-induced renal toxicity but not liver toxicity. Both vitamins prevented elevated DOX-induced oxidative stress. Conclusion: Both vitamin C and vitamin E can help to reduce DOX toxicity in rat kidney, but only vitamin C that has clear benefits on improving liver toxicity after DOX injection.

Keywords: Doxorubicin, renal toxicity, liver toxicity, vitamin E, vitamin C