Effect of caffeic acid phenethyl ester in doxorubicin induced descending aorta damage

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Received 03 April 2024; revised 11 September 2024

Doxorubicin (DOX), a chemotherapeutic agent used in cancer treatment, can cause cardiotoxicity as an adverse effect. In this study, potential protective effect of Caffeic acid phenethyl ester (CAPE), a well-known antioxidant agent, was investigated in doxorubicin induced aortic damage model. Total of 28 adult Wistar albino rats were equally divided into four groups as: Control, DOX, CAPE+DOX, CAPE. Accordingly, 10 µmol/kg CAPE for 10 days and/or 10 mg/kg doxorubicin for 3 days was given intraperitoneally. Control group received saline and ethanol as the vehicles of doxorubicin and CAPE, respectively. GSH, MDA, CuZn-SOD and CAT levels in descending aorta were investigated as the oxidative stress markers and histopathological changes were evaluated. GSH level was significantly higher in CAPE group as compared to the other groups ($P<0.05$) while there were no significant differences in MDA, CuZn-SOD and CAT levels among the groups ($P>0.05$). In microscopic view, tunica media of aorta was significantly thinner in DOX group as compared to CAPE group. Tunica media thickness significantly increased in CAPE+DOX group as compared to DOX group. CAPE treatment ameliorates the histopathological changes that are characterized by the reduced wall thickness induced by doxorubicin. However, CAPE treatment did not seem to effect biochemical parameters that are indicative of oxidative stress. The results indicated that CAPE can be protective against doxorubicin induced aortic vessel damage.

Keywords: CAPE, Doxorubicin, Aorta, Antioxidant, Rat