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The Ameliorative Effect of Vitamin E on Electrocardiogram of Rabbits Exposed to Cadmium Chloride

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Abstract

This study was designed to study the effect of cadmium as an oxidant agent on electrocardiogram(ECG) component and the possible preventive role of vitamin E on deleterious effects of cadmium in adult male rabbits. Twenty adult male rabbits were divided randomly into 4 equal groups (5 animals /group) and treated daily for 84 days. The first group were received ordinary tap water and serve as control (C); the second group (T1) received ad libitum supply of drinking water containing (50ppb) cadmium chloride; the third group T2 received (50ppb) of cadmium chloride in drinking water, in addition to intubation of vitamin E (40mg/Kg B.W.) orally, while the fourth group (T3) were intubated daily with 40mg/Kg B.W of vitamin E. Fasting blood samples were collected at 0, 21, 42, 63 and 84 days of the experiment to determine serum calcium concentration . The ECG was also recorded in all groups at the same interval of the experiment. The results revealed that administration of 50 ppb CdCl2 in drinking water (T1 group) for 84 days caused a significant decrease($p<0.05$) in serum calcium concentration as compared to control. On other hand, the animals treated with vitamin E (T2 and T3) showed, no significant ($p>0.05$) differences in this parameter as compared to control and other groups. Analysis of ECG in Cadmium treated group (T1) showed significant ($p<0.05$) differences represented by significant prolongation of P wave, T wave, QRS complex and P-Q as well as Q-T interval, with a significant ($p<0.05$) decreased of heart rate as compared to the control and vitamin E treated groups (T2 and T3) which clarified non-significant ($p>0.05$) differences in ECG waves analysis. In conclusion, Cadmium effect on electrical conduction of heart was represented by abnormality in some of ECG component as well as the protective role of vitamin E as antioxidant in the cardiovascular system was also confirmed.

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