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Protective effect of coenzyme Q10 against I131 toxicity in rat livers

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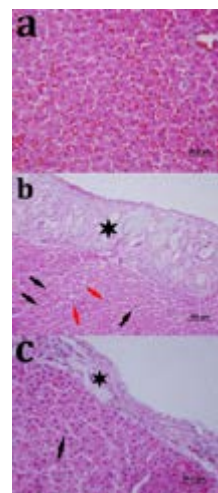
Objective: Radioactive iodine-131 (RAI) related damage is well recognised in several tissues including liver. Coenzyme Q10, is a distinguished anti-oxidant, and very recent studies have shown the hepatoprotective effect of coenzyme Q10 in different hepatotoxicities. Our aim was to evaluate the radioprotective effects of coenzyme Q10 in RAI-induced liver toxicity, which has not been evaluated in English literature yet.

Materials and methods: Thirty-six rats were divided into three groups. Group 1 was the control group, Group 2 was administered 111 MBq/kg of RAI and Group 3 was administered coenzyme Q10 together with RAI. After the administration of the last dose of coenzyme Q10, the animals were decapitated and liver tissue samples were evaluated by histopathology and for oxidative stress parameters.

Results: Group 2 rats showed significantly elevated values of malondialdehyde (MDA) and fluorescent oxidation products (FOP) in liver tissues; however, the total sulphhydryl (total-SH) level was decreased compared to Group 1 and Group 3. In addition, the histopathological damage scores in Group 2 were significantly higher compared to other groups ($p < 0.05$ for all histopathological parameters). The total tissue MDA, and FOP levels of Group 3 were lower than Group 2 ($p < 0.05$) and total-SH level was higher than Group 2 ($p < 0.05$). Liver MDA and FOP levels of Group 3 were higher than Group 1. However, the difference was

not statistically significant ($p > 0.05$). The histopathological damage in Group 3 was significantly less than the damage in Group 2 ($p < 0.05$ for all pathological parameters).

Conclusion: We conclude that depletion of total-SH levels, and increased levels of PFOP and liver MDA are the results of RAI-induced liver damage concordant with histopathology. Moreover, the radioprotective effect of coenzyme Q10 on the liver after RAI therapy was presented in this study and antioxidant activities are likely to be involved in the mechanism underlying the radioprotective effects of coenzyme Q10.



Biography

Aylin Akbulut has completed her fellowship on Nuclear Medicine at the age of 30 years from Gazi University and she had postdoctoral studies at Geneva University, Switzerland with Prof O Ratib, Prof Korkmaz, MD, PhD is the founding director of Nuclear Medicine Department in University of Health Sciences, Ankara Training and Research Hospital. After her fellowship on Nuclear Medicine, she had her Postdoctoral studies on radio-peptides at University of Texas MD Anderson Cancer Center, USA. She has published more than 50 papers in reputed journals and has been serving as an editorial board member of reputed.

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