

The antioxidant effects of coenzyme Q10 on albino rat testicular toxicity and apoptosis triggered by bisphenol A

Refaat A. Eid¹ · Alsaleem Mohammed Abadi² · Attalla F. El-Kott^{3,4} · Mohamed Samir A. Zaki^{5,6} · Eman M. Abd-Ella^{7,8}

1 Department of Pathology, College of Medicine, King Khalid University, P.O. 641, Abha, Saudi Arabia
2 Department of Family and Community Medicine, College of Medicine, King Khalid University, Abha, Saudi Arabia
3 Department of Biology, College of Science, King Khalid University, Abha 61421, Saudi Arabia
4 Department of Zoology, College of Science, Damanhour University, Damanhour 22511, Egypt
5 Department of Anatomy, College of Medicine, King Khalid University, Abha, Saudi Arabia
6 Department of Histology and Cell Biology, College of Medicine, Zagazig University, Zagazig, Egypt
7 Department of Zoology, College of Science, Fayoum University, Fayoum, Egypt
8 Department of Biology, College of Science and Art, Al-Baha University, Al-Mandaq, Al-Baha, Saudi Arabia

Published in: Environmental Science and Pollution Research.

Received: 16 September 2022 / Accepted: 19 December 2022

Polycarbonate plastics for packaging and epoxy resins are both made with the industrial chemical bisphenol A (BPA). This investigation looked at the histological structure, antioxidant enzymes, and albino rats' testis to determine how coenzyme Q10 (CoQ10) impacts BPA toxicity. For the experiments, three sets of 18 male adult rats were created: group 1 received no therapy, group 2 acquired BPA, and group 3 got the daily BPA treatment accompanied by coenzyme Q10, 1 h apart. The experimental period ran for 14 days. The biochemical biomarkers catalase (CAT), superoxide dismutase (SOD), and malondialdehyde (MDA) were altered as a result of BPA exposure. The testicular histological architecture, which is made up of apoptosis, was also exaggerated. Furthermore, rats given BPA and CoQ10 treatment may experience a diminution in these negative BPA effects. These protective properties of CoQ10 may be correlated with the ability to eliminate oxidizing substances that can harm living species. The outcomes might support the hypothesis that CoQ10 prevented oxidative damage and boosted rats' stress responses when BPA was introduced. Thus, by shielding mammals from oxidative stress, CoQ10 aids in the growth and development of the animals. BPA is extremely hazardous to humans and can persist in tissues. Human reproductive functions are a worry due to human exposure to BPA, especially for occupational workers who are typically exposed to higher doses of BPA. As a result, in order to reduce the health risks, BPA usage must be minimized across a diverse range of industries, and improper plastic container handling must be prohibited. By giving CoQ10 to patients, BPA's harmful effects on reproductive structures and functions may be avoided.