**The Investigation of the Protective Effects of C60 Nanoparticle Against Muscle Tissue Damage**

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**Abstract**

Fullerene C60 in the prevention of ischemic damage and therapeutic agent that is used for the correction is determined by the studies. In this study, the therapeutic effect of C60 nanoparticle against muscle tissue damage caused by DMBA (7,12-dimethylbenz [a] anthracene) in Wistar albino female rats were investigated. The animal experiments part of this study was conducted in the F.U Experimental Animal Research Center (FUDAM) with the permission of the F.U Animal Experiments Ethics Committee dated 17.02.2021 and numbered 2021/03. In this study, 60 Wistar albino female rats (n = 60, 8 weeks old) were used. These rats were divided into 4 groups and each group included 15 rats. Groups: (i) Control Group: Group fed with standard diet; (ii) Group C60: C60 (1.7 mg/kg bw, oral gavage); (iii) DMBA Group: DMBA (45 mg/kg bw, oral gavage); (iv) C60 and DMBA Group: C60 (1.7 mg/kg bw, oral gavage) and DMBA (45 mg/kg bw, oral gavage) group. The rats were decapitated after 16 weeks and their muscle tissues were taken and examined. Lipid peroxidation malondialdehyde (MDA) analysis, catalase activity (CAT) and glutathione (GSH) in muscle tissue were determined by spectrophotometer. As a result, caspase-3 and Bcl-2 protein expression levels and MDA levels decreased, CAT and GSH levels were significantly increased in the groups C60 + DMBA compared to the group DMBA. According to the results obtained from this study, it was determined that the fullerene C60 nanoparticle provides a strong protection by preventing the development of damaged muscle tissue. This work was supported by Firat University Scientific Research Projects Unit (FUBAP) with FF. 20.07 project number. In addition, this study was supported by the Council of Higher Education (CoHE) 100/2000 Biotechnology priority field doctoral project and The Scientific and Technological Research Council of Turkey (TUBITAK) 2211/C program.

**Keywords:** Apoptosis, DMBA, Fulleren C60, Muscle tissue damage, MDA