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Determination of Impact of Mycotoxin Enniatin-A on DNA Damage using Comet Assay *in vitro*

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Aim of the study: Mycotoxins are produced by food borne fungi and are important environmental pollutant and carcinogenic agents occurring in many parts of the World. Enniatin A (EN-A), a *Fusarium* mycotoxin, is the common contaminant in cereals and corn and causes serious loss of products and harm other species. Biodiversity is important at all scales of the agricultural landscape for both human and all the living beings. The role of biodiversity for food and agriculture in improving food security and sustainability is important. Therefore, this study was planned to investigate the DNA damaging effect of EN-A by using comet assay in human lymphocytes *in vitro*.

Material and Methods: Cells were treated with 0.048, 0.098, 0.195, 0.39, and 0.78 µg/mL concentrations of EN-A as well as a solvent [DMSO, 0.5% (v/v) of the culture medium], a negative and a positive (hydrogen peroxide) controls. This study was approved by the ethical committee of the Faculty of Medicine, Gazi University (26.05.2014-277).

Results: It was observed that EN-A significantly increased the comet tail intensity at the three (0.098, 0.195, and 0.78 µg/mL) concentrations, while it increased the comet tail length at 0.195 and 0.78 µg/mL concentrations compared to negative control. When compared to solvent control, EN-A increased the comet tail length at all the treatment concentrations (except at 0.048 µg/mL), however it increased tail intensity at only 0.195 µg/mL concentration. According to these findings EN-A has DNA damaging effects in certain concentrations. However, to be able to interpret the impact of EA on genetic material some additional genotoxicity assays as chromosomal aberration, micronucleus and sister chromatid exchanges should also be conducted.

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Keywords: Enniatin-A, mycotoxin, DNA damage, comet assay.