

Summary of the MSc thesis **No 14636**, Faculty of Veterinary Medicine, Urmia University

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Title of thesis: The effects of Quercetin against deoxynivalenol induced adverse effects on intestinal epithelial cells (HCT-116)

Summary:

Colorectal cancer is one of the most common cancers worldwide. Colorectal cancer incidence and mortality are strongly related to risk factors such as age and diet. Prevention and effective treatment related to these cancers are very important in the field of public health. HCT116 is a cancer cell line of human colon epithelial cells, and in studies related to colon cancers is widely used as a model. The purpose of this study was to investigate the effects of Quercetin as an antioxidant present in different food sources against the harmful effects of Deoxynivalenol (DON) as one of the mycotoxins that pollute valuable food substances on HCT116 cancer cells. For this purpose, the cells were incubated for 24 hours with increasing concentrations of Quercetin (Q; 12.5, 25, 50, 100 μ M), followed by incubation with Q and DON concentrations (25 and 50) for the next 24 hours. To evaluate cell viability, methyl thiazole tetrazolium (MTT) test, to measure oxidative stress, malondialdehyde (MDA), total lipid peroxidation (TLP), total antioxidant capacity (TAC) tests were done. Furthermore, to measure nitrosative stress, total nitrite-nitrate (TNN) was measured. The results showed that the survival of cells exposed to DON was significantly reduced compared to the control group. Moreover, the survival of cells exposed to Q increased significantly compared to the control group ($P < 0.05$). Q 50 and 100 μ M treated groups were able to decrease the MDA levels and increase the TAC amounts compared to DON-control ($P < 0.05$). Moreover, varying amounts of Q decreased the TLP levels compared to DON-control group ($P < 0.05$). In total, Q has the ability to counteract the effects of DON in HCT-116 cell lines, and it can be studied as an additive in relation to the colorectal cancers in the future.

Keywords: Quercetin, Mycotoxin, Deoxynivalenol, Epithelial cell, Intestine.