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# Intake of chemopreventive antioxidant dietary supplements has impact on lymphocyte stress-related biomarkers in healthy dogs

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Natural products play significant role for cancer treatment and chemoprevention. Just as humans suffer the consequences of cancer, it manifests similarly in dogs. Epidemiological studies suggest that antioxidants in the diet may protect against cancer. In this study, we investigated *in vivo*, the cytoprotective potential of resveratrol (30.92 mg/per body weight kg/day), ellagic acid (6.85), genistein (14.02), curcumin (28.13) and quercetin (0.73) against oxidative DNA damage, as measured by comet (single cell gel electrophoresis) assay, in dog's lymphocytes. Dog treats were created and evaluated for palatability and ability to administer detectable blood levels of tested chemo preventive agent. Using LC/MS/MS for serum analysis we measured and tabulated resveratrol, genistein and quercetin and were unable to detect any ellagic acid and curcumin. The extent of DNA damage in peripheral blood lymphocytes, as determined by the alkaline comet assay, showed no change in the levels of lymphocytes endogenous DNA damage with and without diet supplementation. However, $H_2O_2$ inducible DNA damage was significantly decreased after antioxidant consumption indicating their protective effect against oxidative attack. Levels of endogenous oxidized pyrimidines followed a similar pattern. Lymphocytes genes transcriptional regulation was measured and quantified using RT2 profiler PCR Array custom made for dog oxidative stress. The expression of 11 of 84 genes was altered after consumption chemopreventive agents. Specifically, the expression of 5 genes, including *CYBB, DUSP1, GSR, UCP2* and *VIMP*, were significantly increased, whereas those of 6 genes, including *ATOX1, CCL5, EPX, MPV17, PRNP* and *SOD3* were down-regulated, suggesting that diet supplementation in addition of antigenotoxic effect improves antioxidant response of the organism and that the comet assay is a useful tool to use as biomarker.

## Biography

Tamara P Kondratyuk has his research work related to search of natural product chemopreventive drugs and their important role in the treatment and prevention of cancer. He showed that marine phenazines deregulate activity of NFkB pathway and activate protective mechanism against neoplastic transformation apoptosis.

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