Title of the project: Influence of inositol hexaphosphate, inositol and sodium selenite on proliferation and apoptosis colorectal carcinoma cells

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Principal Investigator: L. Schröterová

Co-investigators:

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Summary of 2008 results

Title of the presentation: Chemopreventive effects of inositol hexaphosphate, inositol and selenium compounds on colorectal carcinoma cells

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Incidence of colorectal carcinoma is increasing in the Czech Republic and the disease does not respond well to cytostatic treatment. Therefore it is necessary to broaden the spectrum of chemoprevention and therapeutic possibilities. In our project we try to characterize the effect of IP6, Ins and selenium compounds as a potential adjuvant in cancer treatment. We chose three colorectal cancer cell lines HT29, SW480, SW620 with different malignant potential. Cells were treated for 24, 48 and 72 hours. Proliferation was measured as BrdU incorporation, total protein amount using Brilliant Blue staining and colorimetric WST-1, XTT and MTT assays. Cytotoxicity was assessed by neutral red test. Induction of apoptosis was measured by caspase-3 activity fluorescence assay. Changes in cell morphology were studied by phase-contrast microscopy. The changes in expression of E-cadherin (epithelial cell junction protein) in human colon cancer cell line SW 620 after treatment with inositol hexaphosphate (IP6) was determined by means of indirect immunofluorescence.

IP6 increases expression of epithelial marker E-Cadherin in concentration and time dependent manner. Myo-inositol enhanced the proapoptotic effect in all cell lines. All selenium compounds decrease proliferation of tested cell lines. The most potent anti-proliferative and pro-apoptotic compound is Se-(Methyl)selenocysteine and the most considerable decrease in cell proliferation was observe in the SW 620 cell line on that compound.

This study demonstrates ability of chosen selenium compound and phytic acid to reduce the proliferation rate of tested cell lines and to induce the proapoptotic effect.

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