ABSTRACT

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Title of diploma thesis: Effect of inositol hexaphosphate on adhesion and migration of cell lines SW480 and SW620

Inositol hexaphosphate (IP_6) is molecule, which is usually present in nature, especially in grain and legumes. It has been described several processes, which are influenced in human body by IP_6, such as decrease of platelet aggregation, promoting effect on insulin secretion, hypocholesterolemic, as well as anticancer effect. Aim of this work was to study adhesion and migration properties, which are the most important processes in metastasis of cancer cells. For experiments, colorectal adenocarcinoma cell line SW480 and metastatic lymph node cancer cell line SW620, both isolated from identical patient, have been selected. The ability of migration in both cell lines was tested. The influence of IP_6 in different concentrations and several time intervals on mRNA (RT-PCR) and protein level (western blot, immunofluorescence) expressions of adhesion and invasion molecules has been compared as well. Considerable ability of migration was found in metastatic cell line SW620 only, in comparison with SW480 cells. Relevant decrease of migration was observed already after 0,2 mM IP_6 treatment. IP_6 significantly changed the expressions of adhesions molecules (EpCAM, ICAM1) and decreased expressions of molecules involved in invasion processes, in SW480 cells. In SW620 cells, significant decrease of invasion molecules expressions (N-cadherin, MMP-2, MMP-9, Erk1,2, phospho-Erk1,2, NF-κB a phospho-NFκB) was observed. Based on comparison of *in vitro* testing, different sensitivity to IP_6 in both tested cell lines was proven.