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The Effect of Flavonoids and Soil Samples on Cyp1B1 In Mcf-7 Human Breast Cancer Cells.

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Cytochrome P4501B1 (CYP1B1) is known to be inducible by xenobiotic compounds such as policyclic aromatic hydrocarbin (PAH) and dioxins such as 2,3,7,8-tetra-chloro-dibenzo-p-dioxin (TCDD). And these induction of CYP1B1 is also regulated by many categories of chemicals. In this study investigated the effects of several chemicals on CYP1B1 gene expression in MCF-7 cells. Induction of cytochrome P4501B1 (CYP1B1) in cell culture is widely used as a biomarker for PAHs and PAHs are established cancer initiators. Therefore we have studied the effect of PAHs in the human breast cancer cells MCF-7 to evaluate bioactivity of PAHs, Benzo(k)fluoranthene. To identify the chemo-preventive compounds from dietary components, the development of an efficient screening method is required. We examined the MCF-7 human breast carcinoma cells to evaluate bi-oactivity of Benzo(k)fluoranthene and to screen the effectiveness of some flavonoids in re-ducing PAH-induced CYP1B1 expression. MCF-7 human breast carcinoma cells were transfected with hCYP1B1-Luc plasmid transiently and treated with benzo(k)fluo-ranthene (BKF), several of flavonoids like genistein, chrysin, daidzein, morin, and naringenin. The results of CYP1B1-luciferase reporter assay suggested that these flavonoids were effective in reducing BKF-induced CYP1B1 expression at concentration of flavonoid between 1uM and 0.01uM. RT-PCR analysis also indicated that PAHs significantly up-reg-ulate the level of CYP1B1 mRNA and flavonoids were effective in reducing BKF-induced CYP1B1 expression at the same concentrations. Also, we tested soil samples for measure-ment of dioxin-like compounds by CALUX bioassay. In order to investigate CYP1B1 gene expression, MCF-7 cells were transfected with phCYP1B1-Luc and luciferase activity was measured. Most of soil samples caused significantly luciferase induction. TEQs of soil samples ranged from 100.46 to 2296.72 pg-TEQ/g(dry). These data showed that soil sam-ples are contaminated with various dioxin-like chemicals.

Keyword: P4501B1, TCDD, CALUX bioassay, Soil samples, Flavonoid