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ZR-75-1 HUMAN BREAST CANCER CELLS TO STUDY THE MECHANISM OF ACTION OF PAHs

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Recent industrial society has human widely exposed to PAHs that are comming from the incomplete combustion of organic material as widerspread environmetal contaminants.

Biological activities of PAHs are not known although PAHs are considered as carcinogens. PAHs in the mammalian cells affect CYP1A1 gene expression as well as other phase II drug metabolizing enzymes as UDPGT, NMOR etc. The mechanism of action of PAHs has been studied extensively, however it is not clear how PAHs turn on CYP1A1 in human breast cancer.

Our labolatory have been studied the effect of PAHs in the human breast cancer cell lind MCF7. In this study, we examined the ZR-75-1 human breast cancer cells as a new system to evaluate bioactivity of PAHs.

ZR-75-1 human breast cancer cell line has been estabilished from the breast cnacer patient, has estrogen receptors and progesteron receptors. We have been able to estbilish long term culture system of this cells then used for the study to observe the effect of PAHs.

We demonstrate that PAHs induced the transcription of an aryl hydrocarbon-responsive reporter vector containing the CYP1A1 promoter and 7-ethoxyresolufin O-deethylase(EROD) activity of CYP1A1 enzyme in a concentration-dependant manner. RT-PCR analysises indicated that PAHs significantly up-regulate the constitutive level of CYP1A1 mRNA.

Apparently, ZR-75-1 cells have Aryl hydrocarbon recetors, therefore it would be good experimental tool to study the cross-talk between PAHs and steroid actions.

Keyword : polycyclic aromatic hydrocarbon,cytochrome P4501A1,ZR-75-1