P-39

THE DIFFERENCES IN REGULATION OF COX-2 EXPRESSION BETWEEN ESTROGEN AND ISOFLAVONES

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Estrogen is known to exert potent vasodilating effects accompanied with an elevation of cyclooxygenase-2 (COX-2) expression. Structurally similar compounds, isoflavones, have shown in our previous study that they stimulate COX-2 of the heart of animals fed soy isoflavones. And this was accompanied by the increase in plasma nitric oxide(NO) concentrations. In this *in vivo* system of isoflavone fed animal heart, ERK 1/2 expression was down-regulated. Therefore, COX-2 over-expression did not appear to be resulted from ERK1/2 up-regulation. In order to study further the signal transduction pathways of COX-2 influenced by NO, the mammary tumor cells were employed. In vitro system, ERK 1/2 regulation apeared to be associated with the concentrations of phytoestrogens. When the adult female rats were fed isoflavones, nNOS was up-regulated compared to the control and this was not observed with estrogen feeding. The differences between signal transduction system of COX-2 in estrogen and isoflavones were compared in mammary tumor cell culture system.