

Inhibitory Effect of Octylphenol on the TCDD Induced CYP1A1 Expression

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Alkylphenol ethoxylates have been used extensively as nonionic surfactants in industrial processing, household and institutional cleaning products. They are apparently degraded microbially to alkylphenol. Alkylphenol has been shown to possess estrogenic properties and, therefore, is an 'endocrine disrupter' that has significantly influence on sexual and reproductive development. There are some possibility of crosstalk between TCDD and estrogen in terms of CYP1A1 expression. We have studied the two-way crosstalk between the arylhydrocarbon receptor (AhR) and estrogen receptor (ER) signaling pathways. In our previous data, 17-estradiol (E2) significantly inhibited TCDD-induced CYP1A1 gene expression and this inhibitory effect was partially recovered by concomitant treatment of tamoxifen. Because octylphenol (OP) showed the estrogenic activity, we examined the effects of this chemicals on TCDD-induced CYP1A1 gene expression and CYP1A1 enzyme activity in this study. And we investigated if its effect was mediated by ER signaling pathway. TCDD-induced EROD activity was reduced by concomitant treatment with TCDD and OP. Reduced enzyme activity was correlated with decreased CYP1A1 mRNA levels and transcription. These results suggest that OP down-regulates TCDD-induced CYP1A1 gene expression in HepG2 cells, but does not act through the estrogen receptor in these cells.

[This study has been supported by G7 from ME and HMP-98-B-3-0013]

<책임연구자>

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