

P111 Yeast assay system for measuring estrogenic activity of dioxins

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Dioxins have been shown to cause estrogenic effects through the activation of estrogen receptors (ER) bound with the aryl hydrocarbon receptor (AhR) and aryl hydrocarbon nuclear translocator (Arnt) complex (Ohtake F., *et al*, 2003). Since reporter yeast system is able to apply for various studies on environmental contaminants as well as on receptor signaling pathways, we established a reporter yeast that expresses human ER, AhR and Arnt genes. We introduced human AhR and Arnt genes into a chromosome of YES yeast, which has human ER gene in its chromosome and has also the reporter plasmid that contains estrogen responsible element upstream of *lacZ* gene (Sumpter J.P., *et al*, 1996). We confirmed expression of mRNAs from integrated AhR and Arnt genes in the yeast by the quantitative real-time reverse transcription polymerase chain reaction. Then we conducted reporter assays to measure ligand activities of 2,3,7,8-tetrachlorodibenzo-*p*-dioxin, 3-methylcholanthrene, benzo[*a*]pyrene, β -naphthoflavone and indirubin in the yeast. Treatment of these ligands induced a dose-dependent increase in β -galactosidase activity in the yeast but no induction was observed in YES yeast. These results indicate that our reporter yeast is useful for measuring the estrogenic activity of aryl hydrocarbons including dioxins.

ダイオキシン類のエストロゲン様活性を測定する酵母アッセイ系
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P112 Genotoxicity and estrogenic activities of bisphenol A and 3,3'-dinitrobisphenol A in goldfish

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The genotoxicity of bisphenol A (BPA) and 3,3'-dinitrobisphenol A (Dinitro-BPA) in goldfish (*Carassius auratus*) were examined by using micronucleus test and a single-cell gel electrophoresis (Comet assay). The frequencies of micronuclei increased clearly after i.p. injection of Dinitro-BPA at dose of 10mg/kg body weight. However, BPA didn't show any significant frequencies of micronuclei. On the other hand, the values of DNA tail moment increased after the i.p. injection of BPA and Dinitro-BPA at the same dose. The estrogenic activity in goldfish was also determined by measuring plasma levels of vitellogenin (VTG) in male fish. Significant expression of VTG was observed only in BPA administration. In conclusion, BPA and Dinitro-BPA showed genotoxic potential in goldfish. But Dinitro-BPA didn't exhibit estrogenic activity. These data showed that goldfish might be experimental animal to the biological activities.

金魚を用いたビスフェノールA及びジニトロビスフェノールAの変異原性とエストロゲン活性の検定
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