

Effects of enviromental chemicals on the growth of
Prostate cancer and Breast cancer cells

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Summary

Some environmental chemicals have the potential to affect humans or animals by mimicking the effects of hormones. The potential impact of environmental chemicals on human health is under debate.^{2),4)}

In this study, we investigated the effects of the chemicals, nonylphenol, bisphenol A, pentachlorophenol which have been shown to possess sex hormone-like activity on two cell lines, prostate adenocarcinoma cell (PC-3) and mammary adenocarcinoma cell (MCF-7). To compare this chemicals with endogenous estrogen, 17 β -estradiol(natural hormone) and 4-OH tamoxifen (tamoxifen metabolite) were used. We performed MTT reduction assay for cell viability before or after treatments with various concentrations from 0.1 μ M to 100 μ M.

Nonylphenol is one of byproducts of a surfactant degraded by bacterial organisms in rivers.¹⁾ Bisphenol A is a important monomer used in the manufacture of a multitude of chemical products. In PC-3 cell line, originated human prostate cancer, IC₅₀ concentration of bisphenol A was approximately 100 μ M that was similar to other articles³⁾. But, IC₅₀ concentration of nonylphenol was about 10 μ M. This was an unexpected result because nonylphenol has been known to have very weak estrogenity.¹⁾ Pentachlorophenol has been known to have strong toxicity to experimental animals. But in PC-3 cell line, IC₅₀ concentration of pentachlorophenol was about 10 μ M which was similar to IC₅₀ point of nonylphenol. 17 β -estradiol and 4OH-tamonxifen had no effect on the rate of cell growth up to 1 μ M.

Reference

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