

Nonylphenol effects on endometrial adenocarcinoma cell line

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Endocrine Disrupting Chemicals (EDCs) interfere in endocrine system of several organisms, including human. They can act as agonists or antagonists of endogenous hormones. Among EDCs, nonylphenol (NP) is the most abundant and persistent pollutant in the environment. Its xenoestrogenic activity was demonstrated both in vitro and in vivo. Although several studies have demonstrated EDCs role in different pathologies such as endometriosis, recurring abortion and cancer, few studies have been focused on the NP effects on endometrial cell lines. Since NP mimics endogenous estrogens, in this study we examined the effects of NP and 17 β -estradiol (E2) on the proliferation of endometrial adenocarcinoma cell line Ishikawa and their interaction with estrogen receptor ER alpha in order to highlight relationships between NP and endometrial pathologies. We found that NP stimulates Ishikawa proliferation in a dose-dependent manner, with an effect higher than E2. Subsequently, we have analyzed RT-PCR expression of ER alpha transcript after NP and E2 treatment and we have observed that NP induces a two-fold increase of estrogen receptor respect to control. Moreover, immunofluorescence analysis revealed that NP and E2 induce cytoplasm-nucleus translocation of ER α . The nuclear localization of ER α by E2 was already shown after 30 min of treatment and only after 2h and 6h by NP. Finally, we have studied cyclin D1 expression through western blot and demonstrated that NP increases its expression in Ishikawa cells. These results suggest that NP stimulates Ishikawa cell proliferation probably through the interaction with ER α that in turn is involved in the activation of some endometrial cell cycle key regulators such as cyclin D1. In the light of our results, NP can be considered a candidate in the onset of endometrial pathologies.

Key words

Endocrine Disrupting Chemicals (EDCs), nonylphenol (NP), endometrial cell line, immunofluorescence, western blot, RT-PCR.