

Nonylphenol induces proliferation of prostate epithelial cell line (PNT1A)

Maurizio Forte¹, Salvatore Valiante¹, Angela Lucariello², Carmelina Costanzo², Vincenza Laforgia¹, Maria De Falco¹ and Antonio De Luca²

¹ Department of Biology, University of Naples Federico II, Naples, Italy

² Department of Mental and Physical Health and Preventive Medicine, Second University of Naples, Naples, Italy

Nonylphenol (NP) belongs to Endocrine Disrupting Chemicals (EDCs) with xenoestrogenic activity, called xenoestrogens, abundantly present in the environment. NP is widely used as surfactants in industrial and agricultural applications and in plastic formulations. Its xenoestrogenic activity was demonstrated both *in vitro* and *in vivo*. However, there are only few studies on the NP effects on prostate cell lines. Estrogens play an important role in development and growth of the prostate and may cause some pathologies, including cancer. Since NP mimics endogenous estrogens, it could have a negative influence on prostate physiology. In this study we examined the effects of NP and 17 β -estradiol (E2) on the proliferation of non tumorigenic prostate epithelial cell line (PNT1A) and their interaction with estrogen receptors. These effects were also studied in presence of selective estrogen receptor antagonist ICI182,780. We found that both NP and E2 stimulate PNT1A proliferation in a dose-dependent manner, but the NP effects were lower than E2. Immunofluorescence and western blot analyses revealed that both NP and E2 induce cytoplasm-nucleus translocation of ER α . The nuclear localization of ER α by E2 was already shown after 2h of treatment and only after 6h by NP. The inhibition of these effects by adding ICI182,780 was shown. Surprisingly, NP and E2 didn't affect the localization of ER β . These results suggest that NP stimulates PNT1A proliferation probably through the interaction with ER α that in turn is involved in the activation of some prostate cell cycle key regulators.

Key words

Endocrine Disrupting Chemicals (EDCs), nonylphenol (NP), prostate cell line, immunofluorescence, western blot.