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Stimulation of 17 α -ethynylestradiol and 4-nonylphenol on lung adenocarcinoma cell proliferation via xenoestrogenic way

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Statement of the Problem: Lung cancer is one of the major causes of cancer death in the world. In addition to smoking, estrogen is considered to play an important role in the lung cancer development because there are still many non-smokers suffer from lung cancer, especially women. In the environment, some metabolites and waste that similar to human estrogen structurally and functionally are called xenoestrogens. 17 α -Ethinylestradiol (EE2) is used as an oral contraceptive and then released into wastewater after being utilized. Moreover, 4-nonylphenol (NP) which is found in the petrochemical products and air pollutants also reveals estrogenic activity.

Methodology & Theoretical Orientation: In our experiment, 17 β -estradiol (E2), EE2, and NP are administered to stimulate the male (A549) and female lung adenocarcinoma cells (H1435).

Findings: The results demonstrate that EE2 and NP stimulate A549 and H1435 cell proliferation in a dose- and time-dependent manner. Both estrogen receptors α and β are simultaneously activated and up-regulated by epidermal growth factor receptor and extracellular signal-regulated kinase.

Conclusion & Significance: This is the first study to report that EE2 and NP exert an ecotoxic effect to stimulate the proliferation of both male and female lung cancer cells. The new challenges of environmental estrogens to lung cancer deserve further investigation in the future.

Biography

Chia-Hung Sun is a chest medicine doctor and also a Ph.D. student in the Department and Graduate Institute of Physiology, National Yang-Ming University. His investigation is based on clinical and basic medical studies. Lung cancer is the major research object in his Ph.D. program.

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