

【P-18】

Toxicogenomic analysis of Bisphenol A and 4-Nonylphenol using KISTCHIP-400 system in MCF-7 cell line.

Hye-Jung Yun¹, Youn-Jung Kim¹, Eun-Young Kim¹, Ick Young Kim² and Jae-Chun Ryu¹

¹Toxicology Laboratory, Korea Institute of Science & Technology, P.O. Box 131, Chengryang, Seoul, 130-650, ²Cellular & Molecular Biochemistry Laboratory, Korea Univ, Seoul, Korea

Bisphenol A (BPA) and 4-nonylphenol (4-NP) are a class of the broader group of compounds known as alkylphenol. These phenolic compounds are used in a number of commercial products and have been reported to be weakly estrogenic in previous studies. BPA, used as coating material for food cans and dental sealants, is relatively more estrogenic than other phenolic compounds. 4-NP is used in a wide range of consumer products, including cosmetics, cleaners and paints, and in a variety of applications. Their estrogenic activities are mainly dependent on their binding affinity for the estrogen receptors in vitro and in vivo. To identify genes elicited by BPA and 4-NP, we carried out a microarray analysis of MCF-7 cells treated with BPA and 4-NP using KISTCHIP-400 including 401 endocrine related genes based on public database and research papers. Of the genes analyzed, 6 genes represented decreased levels of expression while the 2 genes showed increased levels in the cells treated with 10⁻⁶M BPA. In 10⁻⁶M 4-NP, 8 genes were down regulated and only 1 gene up-regulated. Among them, especially ATP-binding cassette 3, ESTs, H4(D10S170) were down expressed by BPA and/or 4-NP as 17 β -estradiol. Therefore it suggests that these genes may be associate with estrogenic effect on transcriptional level.

Keyword : EDCs, Bisphenol A, 4-Nonylphenol, microarray