

The international debate on differences between cytotoxicity of preservatives used in cosmetic industry determined on consecutive passages of senescent diploid human lung fibroblasts in vitro

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Introduction & Aim: Cell culture system could be a useful model for aging-related changes. The aim of the study was to assess whether there are differences between the results of determination of preservatives cytotoxicity obtained on senescent cells in different age.

Method: Experiments were conducted to determine the cytotoxicity of four preservatives: Methylparaben, propylparaben, 2-phenoxyethanol and benzalkonium chloride on subsequent passages of senescent human lung CCD-8Lu (ATCC[®] CCL201TM) fibroblasts. The tests were carried out in passages no. 10/18. Xenobiotics cytotoxicity was evaluated using two cell viability assays: MTT assay, determining metabolic activity of cells and NRU assay, assessing the integrity of cell membranes. The IC₅₀ values were used as the main measure for comparing the cytotoxicity of tested compounds.

Results: The results showed that the preservatives can be ranked according to the increasing cytotoxic potency towards the tested human diploid lung fi-

broblasts:

2-phenoxyethanol < methylparaben < propylparaben

Conclusion: The passage number of diploid human lung fibroblasts had an important impact on the susceptibility of cells to preservatives. The test of the integrity of cell membranes (NRU) seems to be more appropriate to assess the cytotoxic effect of the investigated preservatives on diploid fibroblasts in different ages, which may be related to the mechanism of action of these compounds.

Biography: Katarzyna Miranowicz-Dzierżawska is currently working in Laboratory of Toxicology, a part of the Department of Chemical, Aerosol and Biological Hazards in the Central Institute for Labour Protection, National Research Institute. She has completed her graduation from Faculty of Pharmacy with Pharmaceutical Analysis specialization of the Medical University of Warsaw and PhD from Jagiellonian University, Cracow.