Military Medical Science Letters
Since 1925

Mil. Med. Sci. Lett. (Voj. Zdrav. Listy) 2022, 91 (supplementum 1)
ISSN 0372-7025 (Print)
ISSN 2571-113X (Online)

MEETING ABSTRACTS

EFFECTS OF BENZO[K]FLUORANTHENE ON PROTEOSYNTHESIS AND SELECTED METABOLIC GENES IN A MODEL OF IMMORTALIZED HUMAN HEPATOCYTES

Jiří Petráš [1,2], Miroslav Machala [3], Jan Vondráček [1,2]
Presenting author: Jiří Petráš (petras@ibp.cz)

[1] Department of Cytokinetics, Institute of Biophysics of the Czech Academy of Sciences, Královopolská 135, 612 65 Brno, The Czech Republic
[2] Department of Experimental Biology, Faculty of Science, Masaryk University, Kamenice 5, 625 00 Brno, The Czech Republic
[3] Department of Pharmacology and Toxicology, Veterinary Research Institute, Hudcova 296/70, Brno, The Czech Republic

Polyaromatic hydrocarbons (PAHs) are a diverse group of environmental and dietary contaminants. PAHs are primarily metabolized through the aryl hydrocarbon receptor (AhR)-regulated enzymatic pathway. Both parent PAHs and their metabolites may exert various types of toxicity in target cells and tissues. In addition to their well-known genotoxic (and carcinogenic) effects, PAHs may alter numerous additional cellular events, including cell metabolism. In this project, we study whether strong AhR ligand benzo[k]fluoranthene (BkF) can modulate genes associated with glucose and lipid metabolism, as well as proteosynthesis, which is essential metabolic process performed at high energetic cost. We used an *in vitro* model of immortalized human hepatocytes, MIHA cell line. We observed a significant suppression of proteosynthesis induced by BkF in MIHA cells, as determined by the SUnSET method. We also observed a moderate deregulation of several genes associated with further evaluated metabolic processes. Based on this, we continue to evaluate possible impact of strong AhR ligands, such as BkF, on cellular metabolism, as well as functional role of this transcription factor in the complex effects of PAHs on cellular metabolism.

This project was funded by a GA ČR Grant No. 21-00533S.

Keywords: OAhR; benzo[k]fluoranthene; proteosynthesis; MIHA cells