Journal of Biological Research

Primo simposio di Biologia Sperimentale applicata al mare e all'ambiente

First symposium on experimental biology: sea and environment

Trapani, Italy, 24-25 May 2019

ABSTRACT BOOK

jbr

www.jbiolres.org

Session: Environment and health

DETERMINATION OF ABUSED SUBSTANCES IN BIOLOGICAL MATRICES FOR TOXICOLOGICAL AND FORENSIC PURPOSES

Fabio Venturella[1], Anastasia Valentina Liga[2]*, Teresa Barone[3], Maria Angela De Luca[4], Francesca Elisabetta Faranda[5]

[1]Department of Biological, Chemical and Pharmaceutical Science and Technologies – University of Palermo; [2]Graduated in Pharmacy, University of Palermo; [3]Department of laboratory diagnostics (Director), ASP 6 Palermo; [4]Toxicology and Biochemistry U.O.S (Responsible), ASP 6 Palermo; [5]Graduated in Pharmacy, University of Palermo, Italy

*Email: ania.liga90the@gmail.com

During the year 2017, a research work was carried out at the Department of laboratory diagnostics - Toxicology and Biochemistry U.O.S. of ASP 6 in Palermo. The purpose of this investigation was to perform a second level analysis in order to look for abuse drugs. The sample used consisted of 73 serum tubes, which had previously tested positive for screening tests. The result of the analysis of these samples revealed a false positivity in most cases. From the information gathered through the sampling reports, it appears that the age group with several drivers, who are subject to checks by the traffic police, is the one from 17 to 30 years, with 35 samples analysed (48%). It also emerged that 92% are male and only 8% female. The percentages of substances detected are THC + Cocaine 8%, Cocaine 15% and THC 77%. Thanks to the processing of collected data, a statistic about the consumption of illicit drugs in the city of Palermo has been produced. Through the findings, it was possible to make a comparison with the incidence of abuse of these substances in Italy. Moreover, it was found that Cannabis is the illicit substance mainly used in the Italian territory. Due to the growing increase in drug use on our territory, it is necessary that the methods used for confirmatory analysis be accurate and precise, in order to provide reliable results on the presence of substances of abuse in biological matrices. In fact more and more sophisticated methods and analytical tools are being developed.

CAN PBDES AFFECT PATHOPHYSIOLOGY COMPLEX IN AIRWAY EPITHELIUM?

Giusy Daniela Albano[1]*, Giulia Anzalone[1], Monica Moscato[1], Rosi Gagliardo[1], Marina Montalbano[1], Anna Bonanno[1], Daniela Giacomazza[2], Fabio Cibella[1], Mirella Profita[1]

[1]Institute of Biomedicine and Molecular Immunology "A. Monroy" (IBIM), National Research Council of Italy (CNR), Palermo; [2]Institute of Biophysics, CNR, Palermo, Italy

*Email: albano@ibim.cnr.it

Exposure to polybrominated diphenyl ethers (PBDEs) can promote multiple adverse health outcomes such as cellular and molecular mechanisms involved in inflammation, mucus secretion, pH variations, and damaging the lung tissues. We investigated the effects of PBDEs (47, 99 and 209) on inflammatory and oxidative response (IL-8 and NOX-4), mucus production (MUC5AC and MUC5B), Trans-Epithelial Electrical Resistance (TEER), and pH variations, using an air-liquid-interface (ALI) airway tissue model derived from A549 cell line and from primary human bronchial epithelial cells (pHBEC). The effect of N-acetylcysteine (NAC) was tested. ALI cultures were exposed to PBDEs (47, 99 and 209) (0,01 to 1 µg/ml) for 24 hours with and without NAC (10mM) (30 minutes before the stimulation). We tested production of IL-8, Muc5AC and Muc5B (mRNAs and proteins) as well as NOX-4 expression (mRNA). TJ integrity was measured by TEER and pH measurements and rheological properties (elastic, G', and viscous, G'', moduli) in apical washes. Exposure of A549 cell line and pHBEC to PBDEs (47, 99 and 209) decreased TEER measurements, increased IL-8, Muc5AC, Muc5B (mRNAs and proteins), NOX-4 mRNA, and the measurements of pH and rheological parameters (G', G'') in comparison to untreated cells. The treatment with NAC inhibited the effects PBDEs-induced in epithelial cells. PBDEs likely induced loss of barriers integrity through activation of inflammatory responses and uncontrolling physicochemical and biological properties in airway epithelium affecting the lung health. N-acetylcysteine may be able to restore the effects of PBDEs.