Palavras-chave: fotogrametria; documentação 3D; fotografia forense; autópsia forense.

Referências:

[1] Pilgrim LJ. History of photogrammetry in medicine. Australas Phys Eng Sci Med.15(1):1-8, 1992. Subke J, Wehner H-D, Wehner F, Szczepaniak S. Streifenlichttopometrie (SLT). Forensic Sci Int. 2000;113(1-3):289-95. doi:10.1016/s0379-0738(00)00236-x, 2000.

[2] Aguiar MSV. Manual Prático de Fotografia Forense - com casos comentados. 1ª ed. São Paulo: Fontenele Publicações, 2020.

[3] Massini F, Ebert L, Ampanozi G, Franckenberg S, Benz L, Sieberth T. Comparison of superficial wound documentation using 2D forensic photography, 3D photogrammetry, Botscan(c) and VR with real-life examination. Forensic science, medicine, and pathology. 17(3):422-30. doi:10.1007/s12024-021-00393-x., 2021.

[4] Pojda D, Tomaka AA, Luchowski L, Tarnawski M. Integration and Application of Multimodal Measurement Techniques: Relevance of Photogrammetry to Orthodontics. Sensors. 21(23):8026. doi:10.3390/s21238026, 2021.

COMUNICAÇÃO ORAL 14

Mitochondrial effects and Caspase-3 activation induced by synthetic cannabinoids in NG108-15 cells

Maria Rita Garcia[1,2,*], Rita Roque Bravo[1,2], Helena Carmo[1,2], Félix Carvalho[1,2], João Pedro Silva[1,2,#], Diana Dias da Silva[1,2,3,#]

[1]UCIBIO – Applied Molecular Biosciences Unit, Laboratory of Toxicology, Department of Biological Sciences, Faculty of Pharmacy, University of Porto, 4050-313, Porto, Portugal.

[2]Associated Laboratory i4HB – Institute for Health and Bioeconomy, Faculty of Pharmacy, University of Porto, 4050-313 Porto, Portugal.

[3]TOXRUN – Toxicology Research Unit, University Institute of Health Sciences, IUCS-CESPU, 4585-116 Gandra PRD, Portugal.

[#]These authors contributed equally

**✉ritagarcia7@hotmail.com*

Doi: https://doi.org/10.51126/revsalus.v4iSup.264

Resumo

Introduction: The increasing abuse of Synthetic Cannabinoids (SCs) has become a major public health concern. While information regarding their toxicity mechanisms is scarce, several cases of poisonings and deaths have been reported, the brain being one of the main organs affected [1]. **Objectives:** This work explored the in vitro neurotoxicity of 14 SCs from different SC classes, namely AMB-FUBINACA, AB-PINACA, MDMB-CHMICA, AB-CHMINACA, ADB-FUBINACA, 5F-AMB, AB-FUBINACA, BZ-2201, X-PB-22F, 5F-PB22, SDB-006, JWH-122, THJ-2201 and XLR-11. M**ethods:** Cell viability (determined by the MTT reduction assay), mitochondrial membrane potential (MMP; assessed by the TMRE assay) and caspase-3 activation were tested in NG108-15 neuroblastoma x glioma hybrid cells after 24h exposure to each SC (at 2x10-7–2 mM in the MTT assay; at 1µM and 1nM in the other assays), in the presence or absence of the CB1R antagonist 0.5µM SR141716A. Statistical comparisons among groups were performed by Kruskal-Wallis test followed by uncorrected Dunn´s test. **Results:** Metabolic viability was affected in the following order of potency: AB-CHMINACA>ADB-FUBINACA>MDMB-CHMICA>AMB-FUBINACA>X-PB-22F>AB-FUBINACA>JWH-122>AB-PINACA>FUBIMINA>THJ-2201>5F-PB22>XLR-11 (EC50 values ranged from 37.33µM to 1.03mM); no cytotoxicity was observed for 5F-AMB and SDB-006 up to 2mM. 5F-PB22 activated caspase-3($p<0.05$) and increased MMP($p<0.0001$), at 1µM. FUBIMINA($p<0.0001$) and XLR-11($p<0.01$) also increased MMP at 1nM. Effects on MMP were independent of CB1R activation. **Conclusions:** The extent to which SCs increased MMP widely varied with the drug and concentration tested. At the selected concentrations, only 5F-PB22 seemed to activate apoptotic pathways. These data could likely explain the heterogeneity of clinical potency observed in intoxication cases following SC abuse. Further investigation is required to explore the mechanisms involved in the elicited neurotoxicity.

Keywords: synthetic cannabinoids; in vitro neurotoxicity; cell viability; mitochondrial membrane potential; caspase-3.

References:

[1] European Monitoring Centre for Drugs and Drug Addiction, Synthetic cannabinoids in Europe – a review, Publications Office of the European Union, Luxembourg, 2021.

Acknowledgments: This work was financed by FEDER-COMPETE 2021 and FCT in the framework of the project

NeuroSCANN (POCI-01-0145-FEDER-029584) and Rita Roque Bravo's PhD grant 2020.04493.BD. This work was also supported by UIDB/04378/2021 of the Applied Molecular Biosciences—UCIBIO and the project LA/P/0140/2021 of the Associate Laboratory Institute for Health and Bioeconomy—i4HB.

COMUNICAÇÃO ORAL 15

The value of post-mortem imaging in the context of medico-legal autopsies

Isabela Bica[1*], Deniz Passos[2], Sara Vilão[1], Luís Cardoso[1]

[1]*National Institute of Legal Medicine and Forensic Sciences - Medical-Legal and Forensic Office of Baixo Vouga, Aveiro, Portugal*

[2]*National Institute of Legal Medicine and Forensic Sciences - North Delegation, Porto, Portugal*

*✉ *isabela.c.bica@inmlcf.mj.pt*

Doi: https://doi.org/10.51126/revsalus.v4iSup.265

Resumo

Introduction: Forensic imaging is an emergent area of the forensic sciences, in that it can constitute an important ancillary exam to the classic medico-legal autopsy or even an alternative to its execution in certain situations, namely through a virtopsy [1,2]. **Objectives:** Here we aim to provide a brief review of the most common imagiology methods and to present two case-reports in which post-mortem imaging would have enabled a more complete case study. **Methods:** Case-Reports presentation. **Results:** First case report is of a 62-year-old male with prior diagnosis of "cancer", depression and previous suicide attempts who jumped from the 3rd floor, falling about 11 meters, dying on impact. The autopsy, which was conducted two days after the victim's death, revealed cranio-meningo-encephalic, vertebro-meningo-medullary and thoraco-abdomino-pelvic traumatic lesions and a hemopneumopericardium. In this particular case, forensic imaging (radiography and/or CT scan) would have aided in finding bone lesions without the need to access difficult areas, such as the vertebral column, and in the detection and characterization of pneumopericardium. The second case relates to a 43-year-old female smoker who presented with sudden hemoptysis. The autopsy, which was conducted one day after the victim's death, revealed a right pneumothorax, suspected after the identification of subcutaneous emphysema, right intercostal spaces under tension and a lowered right hemidiaphragm, a primary pulmonary lesion and meningeal metastasis. In this case, imaging would permit the prior diagnosis and classification of a pneumothorax, allowing for autopsy technique adjustment, and for cancer staging, possibly facilitating a more precise histologic specimen collection. **Conclusions:** Forensic imagiologic study represents a natural extension to the conventional medico-legal autopsy, enabling data collection which supports a certain diagnosis and autopsy guidance, being most useful if done before the autopsy. [3] Despite the expenses incurred by the use of these techniques, they would enable a quicker and more reliable documentation of injuries, which would also allow a more lesion-oriented autopsy technique, while also assuring a safer procedure for the pathologist, particularly in the presence of blade fragments or ballistic foreign bodies.

Keywords: post-mortem imaging; conventional radiography; post-mortem computed tomography; PMCT-angiography; post-mortem MRI.

References:

[1] Grabherr S, Egger C, Vilarino R, Campana L, Jotterand M, Dedouit F. Modern post-mortem imaging: an update on recent developments. Forensic Sciences Research 2: 52-64, 2017.

[2] Grabherr S, Baumann P, Minoiu C, Fahrni, S, Mangin, P. Post-mortem imaging in forensic investigations: current utility, limitations, and ongoing developments. Research and Reports in Forensic Medical Science 6: 25-37, 2016.

[3] Cafarelli FP, Grilli G, Zizzo G, Giuseppe B, Giuliani N, Mahakkanukrauh P, Pinto A, Guglielmi G. Post-mortem Imaging: An Update, Seminars in Ultrasound CT and MRI, 2018.