

Oral Communication 7

## The effect of synthetic cannabinoid ADB-FUBINACA on primary neuronal cultures $\beta$ -galactosidase activity: preliminary findings

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### Abstract

**Background:** ADB-FUBINACA (ADB-FUB) is a synthetic cannabinoid (SC) that has gained popularity among users as a new psychoactive substance. This stems from SC's pharmacological similarity to the active principle of cannabis,  $\Delta^9$ -tetrahydrocannabinol (THC). However, unlike THC, SCs demonstrate full agonism of cannabinoid receptors 1 and 2 [1]. Recent scientific developments have shown that cannabis use may aggravate ageing-related parameters [2,3]. Moreover, a study using human fibroblasts revealed that 1  $\mu$ M THC (2h-long exposure, for 15 days) can increase  $\beta$ -galactosidase activity [3], which serves as a first-line marker for cellular senescence. **Objective:** This study was designed to investigate whether these biologically-relevant concentrations could accelerate neuronal ageing. **Methods:** PHC were isolated from Wistar rat day 18-19 embryos and cultured for up to 21 days-in-vitro (DIV). Exposure to 1 pM, 1 nM and 1  $\mu$ M ADB-FUB (concentrations previously shown to be non-cytotoxic to PHC) started either on DIV3 or DIV7 and was maintained up to 21 DIV. At that final timepoint,  $\beta$ -galactosidase activity was evaluated. DMSO at 0.02% was employed as solvent control. **Results:** Under these experimental conditions, PHC exposed to 1 nM and 1  $\mu$ M ADB-FUB in the DIV3-21 protocol had lower  $\beta$ -galactosidase activity when compared to control conditions ( $p < 0.05$ , 1 nM;  $p < 0.001$ , 1  $\mu$ M). No statistically significant results were registered for PHC under the DIV7-21 exposure protocol. **Conclusions:** These findings are, to the best of our knowledge, the first evidence of a potential “anti-ageing” effect of ADB-FUB. Evaluation of other senescence-related endpoints will follow. Moreover, experiments using another *in vitro* neuronal model (human neuroblastoma cell line SH-SY5Y) are underway to compare the effects of the same drug in different models and further substantiate conclusions on ADB-FUB's effect.

**Keywords:** synthetic cannabinoids; *in vitro* neurotoxicity; ageing

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