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DANUBE SCIENTIFIC CONFERENCES ON EPIGENETICS

Monitoring the endocannabinoid system during chondrogenesis

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Osteoarthritis, a disease leading to pain and finally loss of function, influences the elderly people's quality of life. The currently available surgical techniques aiming to cure osteoarthritis are not satisfactory, therefore there is a niche for new, cell-based regenerative methods. According to the latest results in the field of cartilage research, CB1 and CB2 receptors are expressed in mature and arthritic chondrocytes and cannabinoid products can attenuate the degradation of proteoglycan matrix with the inhibition of cytokine-induced NO production.

During the in vitro part of our work high density chondrogenic cell cultures (HDC) were established from limb buds of 11,5 day-old mouse embryos. The mRNA expression of the members of Endocannabinoid System (ECS) was monitored by semiquantitative RT-PCR and the two cannabinoid receptors were detected by western blot and immunocytochemistry. To evaluate the effect of CB1 agonist (anandamide; AEA) and inverse agonist (AM251) on chondrogenesis chondrogenic markers and matrix constituents were monitored by RT-PCR technique and dimethyl-methylene blue (DMMB) staining, respectively. Ex vivo, we detected the mRNA expression of the ECS members in cartilage samples of different developmental stages and observed the spatiotemporal distribution of the CB1 receptor in mouse embryonic limb buds and in the limbs of young mice. Our results show the presence of each examined receptor and enzyme of the ECS at mRNA level in mouse HDC. CB1 protein is expressed in HDCs, limb buds of a 15-day-old mouse and in the articular cartilage of young animals. CB1 receptor is present during in vivo and in vitro chondrogenesis and the applied pharmacons in a concentration dependent way influence chondrogenesis. This research was supported by the European Union and the State of Hungary, co-financed by the European Social Fund in the framework of TÁMOP-4.2.4.A/ 2-11/1-2012-0001 'National Excellence Program'.

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CERTIFICATE OF ATTENDANCE

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Földvári Zsófia

attended the Conference of Epigenetics (Budapest, 19-21 November 2014) /

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