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MEMBERS OF ENDOCANNABINOID SYSTEM (ECS) IN CHONDRIFYING CHICKEN AND MOUSE MICROMASS CELL CULTURES

(Oral presentation)

Field of medicine: Histopathology
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Introduction: The analgesic and anti-inflammatory effect of cannabis-based products in various pathological conditions of joints (e.g. osteoarthritis, rheumatoid arthritis) are well known. Cannabinoid 1 and 2 Receptors (CB1, CB2) are expressed in synoviocytes and adult articular chondrocytes, however their role has not been clarified in joint tissues yet.

Aim: We aimed to observe the mRNA expression of the EndoCannabinoid System (ECS) members in different cartilaginous tissue samples and chondrifying cell cultures, and to monitor the effect of CB receptor agonists and antagonists on the process of chondrogenesis.

Material and methodology: Chondrifying micromass cultures (CMC) were established from the distal limb buds of four-day-old chicken and 11.5 day-old mouse embryos. Chondrogenesis spontaneously occurs within these cultures during 6-7 days of culturing. The expression of ECS receptors and enzymes were monitored by reverse-transcription PCR technique through the 6 days of culturing. CMC were treated with CB agonist, anandamide (AEA) and antagonists AM-251 and AM-630 in different concentrations for different time intervals.

Results: CB1, CB2 and G-protein coupled receptor 55 (GPCR55) membrane receptors are expressed in differentiating mouse and chicken micromass cultures at mRNA level, however we were unable to detect fatty-acid-amino-hydrolase (FAAH), the enzyme for AEA elimination, in the chicken system. According to our preliminary results AEA positively influences chondrogenesis in chicken and mouse cultures.

Conclusion: Mature and differentiating chondrocytes express ECS receptors and endocannabinoids may have influence on embryonic cartilage formation. Supported by the TÁMOP 4.2.4.A/2-11-1-2012-0001 project co-financed by the European Union and the European Social Fund.

Key words: Endocannabinoid System, CB1, CB2, GPCR55, chondrogenesis





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