

Poster Abstract Submission

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Research Title	Creating a Proinflammatory Chondrocyte Cell Model to Investigate Anti-inflammatory Leads

Abstract:

Background In vitro cell models are pivotal in medicine and biology because they provide insight into cells' biochemical pathways, simulating bioactivities, mechanics and physiological behavior of organs or organ systems. In this study, we have optimized a protocol for a proinflammatory chondrocyte model. Methodology Chondrocytes were grown from bone marrow mesenchymal stem cells (BMSC). Inflammation was induced in these chondrocytes using lipopolysaccharides (LPS) (large molecules consisting of a lipid and a polysaccharide). To assess inflammation, we measured the levels of proinflammatory marker - tumour necrosis factor- α (TNF α), in the LPS treated chondrocytes using ELISA. Additionally, we also appraised the effect of vitamin – D on the proinflammatory chondrocyte model to assess if this model can be employed for the investigation of therapeutic leads. Results Chondrocytes successfully differentiated from BMSCs. Expression of TNF α was elevated in the LPS treated chondrocytes in comparison to the control (chondrocytes treated with buffer). Vitamin D attenuated the expression of TNF α in the LPS treated chondrocytes indicating that the in vitro proinflammatory cell model can be used for the investigation of therapeutic leads. Conclusion Chondrocytes are generally isolated for different physiochemical investigations from cartilage tissue. Because of limited availability of cartilage and low yield of viable chondrocytes from cartilage, such physiochemical investigations often prove difficult and expensive. The protocol depicted in this study can not only be employed to generate large number of viable chondrocytes but also can be used for evaluating the effect of therapeutic leads towards chondrocytes' inflammatory response, and therefore may prove valuable for investigating, managing, and treating diseases such as rheumatoid arthritis and osteoarthritis.