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Cytorich: a novel anti-inflammatory/catabolic and regenerative autologous blood-derived product for osteoarthritis treatment

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Abstract

Statement of the Problem: Osteoarthritis (OA) is degenerative joint disease characterized by cartilage damage and synovial inflammation. Autologous blood-derived products target special inflammatory molecular pathways and have a beneficial therapeutic effects for inflammatory pathologies. The purpose of this study was to assess the in vitro and in vivo anti-inflammatory/catabolic and regenerative potential of a novel autologous blood product (Cytorich).

Methodology: Blood samples from healthy donors were incubated using different techniques for 24h and analyzed for the presence of anti-inflammatory (IL-1ra), anti-catabolic (tissue inhibitors of metalloproteinases, TIMPs), regenerative, pro-inflammatory (TNF-α, IL-1) and catabolic (matrix metalloproteinases, MMPs) molecules. Double-blinded controlled clinical study was conducted to evaluate clinical effectiveness and safety of the final product using VAS and WOMAC scales.

Findings: The highest concentration of therapeutic molecules targeting inflammatory and degeneration pathways in OA as well as platelet-derived growth factor was found in 24h 37C incubated blood. However, the increased production of catabolic MMP9 and TNF-α and IL-1 was detected in the product. We have found that this negative effect could be blocked by adding citric acid making future OA treatment more safe and effective. Double-blinded controlled clinical study has shown a safety and efficiency of this new product. The analysis of WOMAC and VAS scores revealed improvement in pain and daily activities parameters.

Conclusion & Significance: Cytorich is an efficient and safe autologous product for OA treatment since it has been reported as source of human bioactive molecules playing a key role in the fundamental processes stimulating tissue repair and regeneration.

Biography

Anthony Galea is a renowned sports medicine doctor. He is the Founder and Medical Director of the Institute Human Mechanics an internationally recognized sports medicine clinic in Toronto. He has lectured at the University of Toronto and internationally. Dr. Galea has been a sports medicine doctor at the Olympics, team physician for the Toronto Argonauts and a sports medicine doctor and consultant for numerous high profile athletes such as Tie Domi, Jamal Lewis, Alex Rodriguez and Tiger Woods. His research is focused on developing new technics for regenerative medicine, scaffolds, stem cells and growth factors.

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