Injectable Nanomaterial-Extracellular Matrix Constructs

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Technology description

UNIVERSITY OF MISSOURI Office of Technology Management and Industry Relations Non-Confidential Abstract of Invention UM Disclosure Numbers 15UMC005 & 16UMC014 Protective Injectable Biological Matrix to Treat Joint and Spinal Cord Injuries and Treat/Prevent and Osteoarthritis
INNOVATION:
This invention is a treatment designed to mitigate cartilage degeneration after joint or spinal cord injury to prevent and/or treat osteoarthritis. The key to this technology is the combination and formulation of anti-inflammatory agents and free-radical scavengers in an injectable biological matrix that provides durability and lubricity, while reducing chondrocyte apoptosis and cartilage degeneration; thereby relieving pain and mitigating the progression of osteoarthritis. Injection can occur intra-articularly, similarly to current methods of injection, or directly into the damaged cartilage.
BACKGROUND:
Joint or spinal cord trauma can result in acute posttraumatic osteoarthritis (PTOA), characterized by swelling, synovial effusion, inflammatory cell infiltration, and chronic pain. Cartilage degeneration is a result of PTOA that can lead to osteoarthritis (OA) in the majority of patients with joint or spinal cord injury. PTOA treatment is a challenging clinical problem in orthopedic and trauma surgery. Currently, therapies available address the symptoms of PTOA, but not the underlying cause. MU’ s protective injectable biological matrix treats the underlying causes of OA.

Application area

Osteoarthritis or Degenerative Arthritis
Posttraumatic Osteoarthritis
Joint inflammation
Spinal cord trauma
Joint trauma

Advantages

Lubricity, anti-inflammatory and regenerative effects

Minimally invasive method of treatment
Biological matrix
THAT prevents washing away by synovial fluid
Directly treats the cause, not just the symptoms

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