

SUSTAINED RELEASE OF AGAROSE-HYALURONAN HYDROGEL WITH ANTI-FRICTION PERFORMANCE

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ABSTRACT

Hyaluronic acid (HA) as a major constituent of bionic synovial fluid (BSF) has significant role in lubrication of human body hip joints. Those who mostly suffer from joint related disease prefer to try injections of synovia after total hip arthroplasty (THR). However affection of Metabolism process to the injected synovia is able to destroy prolonging the life time of the prostheses. In this study injectable, thermosensitive agarose hydrogel as a carrier for hyaluronic acid has been investigated to extend the life time of the artificial hip joints. Experimental evidences reveal bioactivity, superior viscoelasticity and naturally amorphous network structure of the HA in combination with the large molecules of agarose is able to create the three dimensional polymeric network to separate the conterminous surfaces and improve the lubrication with more

than 30% reduction rate in coefficient of the friction. Role of mechanical and rheological properties of designed polymeric network in cumulative of the release has been widely investigated. Novelty of the present work provides a survey to the long-term lubrication of artificial hip joints.

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