CHITOSAN HYDROGEL FOR THE TREATMENT OF OSTEOARTHRITIS

Tim, C.R.(1); Martignago, C.C.(2); Neves, L.M.G.(2); Assis, L.(1); Parizotto, N.A.(2); Criniti, C.(3); Liebano, R.E.(2); Zambone Pinto, K.(2); Rennó, A.(3);
(1) UnBr; (2) UFSCar; (3) UNIFESP;

Osteoarthritis (OA) is a progressive degenerative disease characterized by loss of articular cartilage, subchondral bone remodeling, joint space narrowing, and osteophyte formation. Due to the very limited cartilage regenerative capacity and consequently the limited efficacy of the standard treatments, the investigation of strategic innovative approaches to prevent the development of the clinical condition of OA is of great interest. One promising treatment is the use of chitosan mainly due to its several advantages including easy handling, high cell seeding efficiency and good formability to irregular defects in a minimally invasive manner. Therefore, this study aimed to investigate the effects of chitosan on degenerative modifications on the articular cartilage using an experimental model of knee OA. Twenty male Wistar rats were randomly divided into two groups: knee OA control group (OAC); OA plus chitosan injection (OACH). Chitosan hydrogels were prepared using 1 mL chitosan solution was mixed with 0.67mL urease solution and 10 ul of the urea solution. Before gelation, 30 uL chitosan solution containing 10M urea and 30 U/mL urease were injected in knee articular joint. Animals were euthanized on day 30 post chitosan injected. The results showed that control groups showed a better pattern of tissue organization, with less fibrillation and irregularities along the articular surface and chondrocytes organization, when compared to chitosan group. These results suggest that chitosan injection was not effective in preventing cartilage degeneration induced by knee OA.