

Study of early effects of chitosan nanoparticles with glutathione in rats with osteoarthrosis

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Due to cartilage's limited capacity for regeneration, numerous studies have been conducted to find new drugs that modify osteoarthrosis's progression. Some evidence showed the capability of chitosan nanoparticles with glutathione (Np-GSH) to regulate the oxide-redox status in vitro in human chondrocytes. This work aimed to evaluate the capacity of Np-GSH in vivo, using Wistar rats with induced surgical osteoarthrosis.

Radiographic, biochemical (GSH and TBARS quantification), histopathological, and immunohistochemical (Col-2 and MMP-13) analyses were performed to evaluate the progress of the osteoarthritic lesions after the administration of a single dose of Np-GSH. According to the results obtained, the GSH contained in the NPs could be vectored to chondrocytes and used by the cell to modulate the oxidative state reduction, decreasing the production of ROS and free radicals induced by agents oxidizing xenobiotics, increasing GSH levels, as well as the activity of GPx, and decreasing lipid peroxidation. These results are significant since the synthesis of GSH develops exclusively in the cell cytoplasm, and its quantity under an oxidation-reduction imbalance may be defective. Therefore, the results allow us to consider these nanostructures as a helpful study tool to reduce the damage associated with oxidative stress in various diseases such as

References

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