

## Preparation and Biological Evaluation of $^{186/188}\text{Re}$ -Chitosan for Radiosynovectomy

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**Abstract :** Chitosan is a natural and biodegradable polysaccharide with special characteristic for application in intracavitary therapy.  $^{166}\text{Ho}$ -chitosan has been reported for the treatment of hepatocellular carcinoma and RSV with promising results. The aim of this study was to prepare  $^{186/188}\text{Re}$ -chitosan for radiosynovectomy purposes and investigate the probability of its leakage from the knee joint.  $^{186/188}\text{Re}$  was produced by neutron irradiation of the natural rhenium in a research reactor. Chemical processing was performed to obtain  $(^{186/188}\text{Re})\text{-NaReO}_4$  according to the IAEA manual. A stock solution of chitosan was prepared by dissolving in 1 % acetic acid aqueous solution (10 mg/mL). 1.5 mL of this stock solution was added to the vial containing the activity and the mixture was stirred for 5 min in the room temperature. The radiochemical purity of the complex was checked by the ITLC method, showing the purity of higher than 98%. Distribution of the radiolabeled complex was determined after intra-articular injection into the knees of rats. Excellent retention was observed in the joint with approximately no activity in the other organs.

**Keywords :** chitosan, leakage, radiosynovectomy, rhenium

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