

عنوان مقاله:

Preparation and quality control of ^{177}Lu -chitosan for radiosynovectomy

محل انتشار:

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خلاصه مقاله:

Introduction: Rheumatoid arthritis (RA) is the most common autoimmune disease, leading to the destruction of the joints and causing pain, disability, and immobility in the patients. Radiosynovectomy (RSV) has been applied as an effective treatment for the patients with resistant synovitis after failure of long-term pharmacotherapy and intra-articular steroid injection for more than 50 years. Several radiopharmaceuticals have been developed for RSV so far, but still development of new radiopharmaceuticals is of crucial interest. In this research, the ^{177}Lu -chitosan complex (^{177}Lu -CHITO) was introduced as a new agent for RSV. **Methods:** ^{177}Lu was produced by irradiation of a natural Lu_2O_3 target at a thermal neutron flux of approximately $4 \times 10^{13} \text{ n/cm}^2\cdot\text{s}$. ^{177}Lu -CHITO was prepared in the diluted acetic acid solution. The radiochemical yield was checked by ITLC method. The biodistribution of the complex was investigated by intra-articular injection to rabbits' and rats' knee joints. The leakage of injected dose from the injection site in the rabbit organs was investigated using SPECT imaging up to 48 hours. **Results:** ^{177}Lu was prepared with a specific activity of $2.6\text{-}3 \text{ GBq}\cdot\text{mg}^{-1}$ and radionuclide purity of 99.98%. ^{177}Lu -CHITO was prepared successfully with high radiochemical purity (95%) and specific activity of $888 \text{ TBq}\cdot\text{mmol}^{-1}$. Both the biodistribution data in rats and SPECT imaging of the rabbit showed that there was no significant leakage of the injected activity even after 192 h. **Conclusion:** Considering all of the excellent features of the complex, this radiopharmaceutical can be used for .effective management of synovial inflammation

کلمات کلیدی:

Chitosan, Radiosynovectomy, Lu-177, Biodistribution, SPECT

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