

Compartmental Model Approach for Dosimetric Calculations of ^{177}Lu -DOTATOC in Adenocarcinoma Breast Cancer Based on Animal Data

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Abstract : Dosimetry is an indispensable and precious factor in patient treatment planning; to minimize the absorbed dose in vital tissues. In this study, In accordance with the proper characteristics of DOTATOC and ^{177}Lu , after preparing ^{177}Lu -DOTATOC at the optimal conditions for the first time in Iran, radionuclidic and radiochemical purity of the solution was investigated using an HPGe spectrometer and ITLC method, respectively. The biodistribution of the compound was assayed for treatment of adenocarcinoma breast cancer in bearing BALB/c mice. The results have demonstrated that ^{177}Lu -DOTATOC is a profitable selection for therapy of the tumors. Because of the vital role of internal dosimetry before and during therapy, the effort to improve the accuracy and rapidity of dosimetric calculations is necessary. For this reason, a new method was accomplished to calculate the absorbed dose through mixing between compartmental model, animal dosimetry and extrapolated data from animal to human and using MIRD method. Despite utilization of compartmental model based on the experimental data, it seems this approach may increase the accuracy of dosimetric data, confidently.

Keywords : ^{177}Lu -DOTATOC, biodistribution modeling, compartmental model, internal dosimetry

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