

Evaluation of Herceptin-177Lu for therapy of mice breast cancer

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Abstract

Background: Herceptin is a monoclonal antibody that is used in treating breast cancer. In this study, Herceptin is labeled with lutetium-177 and after performing all the quality control tests the therapeutic efficiency was evaluated in the mice bearing breast tumor.

Methods: Herceptin was labeled with ^{177}Lu via DOTA. The quality control tests included labeling efficiency, stability in buffer and blood serum, immunoreactivity and stability in mice were performed and therapeutic efficiency was evaluated in mice bearing breast tumor.

Results: Labeling efficiency more than 90%, stability in buffer and blood serum up to 7 days 85% and 75% respectively, immunoreactivity 86% suggested that ^{177}Lu -Herceptin could be used as a radio immunotherapy agent. The results of therapy in mice showed that the injection of complex (300 μCi) could limit the tumor growth up to 15 days.

Conclusion: By the good results of animal study, ^{177}Lu -Herceptin could be considered as a new radiopharmaceutical agent for use in radio immunotherapy of breast cancer in humans that needs more investigation.

Keyword: Breast cancer, therapy, Herceptin, labeling, ^{177}Lu , radio immunotherapy.