عنوان مقاله:

Evaluation of 99m Tc-MccJ25 peptide analog in mice bearing B16F10 melanoma tumor as a diagnostic radiotracer

محل انتشار:

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خلاصه مقاله:

Objective(s): Despite recent advances in treatment modalities, cancer remains a major source of morbidity and mortality throughout the world. Currently, the development of sensitive and specific molecular imaging probes for early diagnosis of cancer is still a problematic challenge. Previous studies have been shown that some of the antimicrobial peptides (AMPs) exhibit a broad spectrum of cytotoxic activity against cancerous cells in addition to their antimicrobial activities. MicrocinJ25 (MccJ25) is an antimicrobial peptide that is produced by Escherichia coli (E. coli) strain. The aim of this study was to investigate the potential of a new peptide radiopharmaceutical derived from MccJ25 for diagnosis of melanoma tumor bearing C57BL/6 mice. Methods: A 14 amino acid analog of MccJ25 was labeled with technetium-99m (99mTc) through hydrazinonicotinamide (HYNIC) chelator and tricine as coligand. In vivo tumor uptake and tissue distribution were evaluated. The in vivo biodistribution studies were determined in C57BL/6 mice bearing B16F10 tumor. Results: The amount of non-peptide related 99mTc-impurities that measured by thin layer chromatography (TLC) did not exceed 5% of the total radioactivity. The in vitro binding to B16F10 cells was 30.73 ± 0.9% after 1 h incubation at 37°C, and saturation binding experiments showed good affinity for radio-complex (Kd=47.98±6.25 nM). The melanoma tumor was clearly visible up 1 h post-injection by gamma camera imaging. Conclusion: The results showed that 99mTc-labeld peptide could be a promising candidate as a targeting radiopharmaceutical for melanoma tumor imaging in mice.

کلمات کلیدی:

99m Tc-MccJ25, Radiotracer, B16F10, Tumor