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Original Article

Synthesis, Labeling and Quality Control of a New Neuropeptide Y Analogue for Diagnosis of Breast Tumors

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Abstract:

Introduction: Over expression of selected peptide receptors in human tumors has been shown to represent clinically relevant targets for cancer diagnosis and therapy. The aim of this work was to investigate Neuropeptide Y (NPY) as a new radiopharmaceutical for diagnosis of breast cancer.

Methods: A neuropeptide Y analogues with Y₁ receptor preference and agonistic properties was synthesized by solid phase method. After conjugation with diethylenetriaminepentaacetic acid (DTPA) labeling with ¹¹¹In was performed. For labeled peptide, yield of labeling, stability in human serum, receptor binding in cell surface with internalization in SK-N-MC cells, and biodistribution in normal rat were determined.

Results: Peptide was synthesized and labeled with more than 95% purity. Radiolabeled peptide was stable in human serum and specifically binds and internalized in the cells with Y₁ receptor (4h = 22%). A rapid clearance from blood pool and urinary with hepatobiliary excretion were observed.

Conclusion: Our results showed that this peptide can be considered as a candidate for diagnosis of breast tumors

Keywords:

[Neuropeptide Y](#) . [DTPA](#) . [In-111](#) . [Tumor](#)

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