

Public Abstract

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Title:Structure-Activity Relationship of Octreotide Analogues Labeled with Rhenium and Technetium-99m

The importance of detecting cancer has increased over the past years as more people are affected by this disease. Early detection of cancer is crucial for its treatment. The survival rate of pancreatic cancer is very slim because it is detected at late stages. The use of radioactive elements is of interest since they can either emit radiations that can be used for diagnostic or therapeutic purposes. The main goal of this project is to incorporate a radioactive metal into a somatostatin receptor targeting analogue for diagnostic and therapeutic purposes. The metal incorporation into the analogue should be stable in the biological system, to avoid any damage to the normal tissues. Also, the radiolabeled analogue should target the pancreatic tumors to spare the normal tissues of any radiation damage as well. Several series of somatostatin analogues were developed and only one metal incorporated analogue showed high binding affinity toward pancreatic tumors. However, the metal incorporation of this analogue was not stable under physiological conditions (pH 7.4 and 37 Å°C). Other analogues developed were able to hold onto the incorporated metal under physiological conditions, however at the expense of their binding affinity to the receptor. Our development and characterization of these analogues will lay the foundation for future research studies that will further develop this radiometal incorporated analogue into a clinically-relevant detection and therapeutic option for pancreatic cancer.