

Public Abstract

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Title:Synthesis Design and Nuclear Medicine Applications For Radio-metal, Beta and Gamma Emission, Chelated Complexes

Nuclear medicine covers a wide variety of radionuclides to meet demands of disease. In the current study, first we have looked at the application of mono-amine mono-amide ligands for Re(V), $^{99m}\text{Tc(V)}$, and $^{186}\text{Re(V)}$ with respect to bombesin for receptor targeting in the pancreas. It was determined that the complexes are highly lipophilic in nature, however there is uptake that is analogous to literature findings. Two ligand frameworks, 222-MAMA and 323-MAMA were compared for metal chelation to determine which of the ligands would be best suited for future studies. Lastly we examined the stability of Rh(III) tetrathioether complexes and compared findings to previously studied complexes. With modification, three species were isolated and characterized. This research will be translational to $^{105}\text{Rh(III)}$ radiochemistry and future application of biological studies.