Relative Biodistribution and Tumor Uptake of 131I-NM404, a.k.a. CLR1404, in Human Subjects with Advanced Colon Cancer

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INTRODUCTION

NM404, a.k.a. CLR1404, is a phospholipid ether analogue that interacts with distinct areas of the cell membrane that contain more lipid rafts (6-10x) than normal cells and at the same time are relatively deficient in certain phospholipid metabolic enzymes, NM404 demonstrates selective uptake and retention in cancer cells. Our lab is working to develop a therapeutic agent for metastatic colon cancer.

METHODS

Patient whole body images were acquired on a dual-head gamma camera (Helicon/General Electric, Madison, Wisconsin). Whole body scan was acquired over 10 minutes at 15% and 424 +/- 15% low energy photopeak windows. Images were reconstructed with filtered backprojection and a 30 cm field of view. The 131I-NM404 biodistribution planar scan was acquired with a single image obtained 24 hours after injection of 1.7 GBq. SPECT/CT images were acquired on a high-resolution SPECT camera (Symbia T16, Siemens, WI) with 1 GBq 131I-NM404. The images were acquired with 64 projection frames at 15 seconds each, a 256 x 256 reconstruction matrix, 1.6 mm pixel size, and a 30% low energy photopeak. The SPECT/CT images were obtained by fusing the SPECT images with contrast enhanced CT images in order to localize uptake.

RESULTS & ANALYSIS

Patient 1: Patient with a history of recurrent metastatic colorectal cancer treated with chemotherapy.

Treatment study: Bioluminescence imaging of the tumor site was performed prior to and 21 days after injection of 1.7 GBq of 131I-NM404. Normal biodistribution is present in the liver and bowel. Tumor uptake continues to increase while background activity continues to directly decrease over time.

CONCLUSIONS

This novel "diapeutic" (diagnostic and therapeutic) agent for metastatic colon cancer.

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