BIODISTRIBUTION OF I-131 LABELED 3-IODO-O-METHYL-L-α-METHYLTYROSINE (OMIMT) IN TUMOR-BEARING RATS : A COMPARISON STUDY WITH L-3-[I-131]iodo-α-methyltyrosine (IMT).

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Radioiodine labeled tyrosine analogues, such as L-3-[I-123]iodo-α-methyltyrosine, have been used for the evaluation of cerebral amino acid transport. Furthermore, these could be used for the tumor grading. We added one methyl-group to the L-3-α-methyltyrosine, expecting the increased cellular membrane permeability. The aim of this study was to evaluate the feasibility of OMIMT as an agent for tumor image.

After synthesis of o-methyl-L-α-methyltyrosine (OMAMT), OMAMT was labeled with I-131 using Iodogen method. Synthesis of [I-131] IMT was performed as previously described (C. Krummeich et al. J. Appl. Rad. Isot. 45:929, 1994). Uptake and retention studies were performed using 9L gliosarcoma cells(10^6) at various time points upto 4 hr. OMIMT uptake was 2.5 times higher than IMT uptake at 60 min and same after 2hr. Female Fischer rats were implanted with the 9L gliosarcoma cell line into right thigh. The biodistribution (five rats per group) was evaluated (30min, 2hr, 24hr) after iv injection of 3.7 MBq I-131 labeled OMIMT or IMT. Maximum accumulation in tumors occurred at 30 min for both OMIMT and IMT. The tumor uptake of OMIMT was significantly higher than that of IMT at ealy time point studied (3.74 vs 0.38 %ID/g at 30 min and 2.40 vs 0.24 %ID/g at 2 hr, respectively). However, The tumor uptakes of both radiolabels were similar at 24 hr (0.04 vs 0.05 %ID/g, respectively). The kidney was the major route of elimination and had the greatest accumulation (23.98 vs 4.03 %ID/g at 30 min). Gamma camera images were obtained at 30 min, 2 hr and 24 hr. Tumor was visualized as early as at 30 min. These data suggested that [I-131]OMIMT might be useful as a tumor imaging agent and had advantage for the tumor image.