

## Radiopharmaceutical Chemistry: Radiopharmacy

### Radiopharmacy Posters

# Initial studies of radiolabeling and biodistribution of peptide p160 = analog<sup>20</sup> with technetium-99m

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**Objectives:** Peptide p160 (VPWMEPAYQRFL) is a linear = dodecapeptide<sup>20</sup> identified through random phage display. This peptide shows<sup>20</sup> high specificity for breast cancer and neuroblastoma. The = p160<sup>20</sup> analog 8 mer (WMEP-βA-YQR) showed in previous studies = stability<sup>20</sup> against degradation and increased binding capacity to = neuroblastoma<sup>20</sup> cells when compared to native p160. In this study, we = investigated<sup>20</sup> radiochemical profile and biological distribution of the p160 = analog conjugated to HYNIC, labeled with Tc-99m using = βAla as a = spacer.

**Methods:** Conjugated HYNIC-βA-WMEP-βA-YQR was = labeled with = <sup>99m</sup>Tc using tricine and EDDA as coligands and stannous<sup>20</sup> chloride as reducing agent. The reaction was done by heating = to = 100 = BOC during 20 minutes. Radiochemical evaluation was = performed on = ITLC-SG and HPLC. Stability of the radiocompound as well = partition = coefficient was also ascertained. Biodistribution studies = were = performed in Swiss mice at 5, 15, 30, 60, 120, 240, 360 and = 1440 min = post-injection . Uptake of tissues and organs was estimated = in a = gamma counter and calculated as percent of injected dose per = gram of = tissue (%ID/g).

**Results:** Radiochemical purity of = <sup>99m</sup>Tc-HYNIC-βA-WMEP-βA-YQR<sup>20</sup> was 99.2 = B 10.3%, with stability for 6h . Partition = coefficient<sup>20</sup> showed that the radiolabeled molecule was highly hydrophilic<sup>20</sup> with a log P = 3D -3.13. Biodistribution indicated fast blood = clearance<sup>20</sup> of 6.9 = B 11.0 %ID/mL (5 min post-injection) to 0.7 = B 10.1 = %ID/mL (1h = post-injection). Highest uptake corresponded to kidneys, as = the drug = is very hydrophilic, followed by intestine.

**Conclusions:** Radiolabeling of p160 was achieved with very = high<sup>20</sup> yield, and favorable biodistribution results encourage = further<sup>20</sup> studies in tumor models.