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# 99mTc-labeled L/D-amino acids for cancer imaging

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Radiolabeled amino acids for assessment of increased rates of amino acid transport in cancer cells continue to gain importance in cancer imaging. Radiotracers targeting transporters of cationic amino acids (CAs), such as Cationic Amino acid Transporter-1 (CAT-1) and Amino acid Transporter B<sup>0,+</sup> (ATB<sup>0,+</sup>), hold great potential as imaging biomarkers for predicting and monitoring response to arginine deprivation therapy or imaging brain tumors, among other applications. Interestingly, nearly no metal-based radiotracers based on CAs are known, especially those containing radiometals obtained from widespread commercially available generators such as technetium-99m (<sup>99m</sup>Tc) or gallium-68 (<sup>68</sup>Ga). Therefore, aimed at addressing unmet needs in the clinical setting and within the framework of a FCT-funded project (Targeting the transporters of cationic amino acids for cancer radiotheranostics: experimental and computational chemistry approach), we have proposed the design of new families of <sup>99m</sup>Tc-labeled cationic L/D-amino acid derivatives and the evaluation of their internalizing properties in representative cancer cell lines. For the most promising complexes, we will further assess their biological behavior in adequate animal models.
Herein, we will describe the synthesis and characterization of L/D-amino acid (Arg, Lys, His and Trp) containing chelating ligands, as well as the radiosynthesis of the corresponding <sup>99m</sup>Tc complexes.

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