

Tytuł pracy: Determination of radiochemical purity in radiopharmaceuticals based on HYNIC BFC in the clinical routine.

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Afiliacja: HYNIC (hydrazinonicotinamide) is an efficient bifunctional chelator for Tc-99m used for labelling biomolecules for molecular imaging. It is of great interest as a ^{99m}Tc -binding unit because of its monodenticity which allows to use a variety of co-ligands altering the biodistribution in the desired way. Various co-ligands and combinations of co-ligands have been evaluated, including glucarate, mannitol, tricine or ethylenediamine diacetic acid (EDDA). With the exception of EDDA, the chelating ligands used have been rather weakly chelating ligands that form kinetically unstable complexes. To overcome this obstacle, the addition of more strongly binding chelators is essential. Thus, for example, tricine is commonly displaced from labelled complexes by post-labelling addition of EDDA. The resulting Tc-99m-labelled conjugates are more stable and more homogeneous. These secondary co-ligands are added because the labelling is usually less efficient if carried out in the absence of the weakly chelating primary co-ligand. The EDDA/tricine exchanging mixture showed desirable pharmacokinetics and targeting affinity in several studies. Moreover, its complex exhibits the lower degree of serum protein binding, higher stability and faster blood clearance over tricine alone.

The objective of this project was to develop a reliable and accurate thin-layer-chromatography method for radiochemical purity determination of radiopharmaceuticals based on HYNIC BFC such as ^{99m}Tc]Tc-HYNIC-TOC or ^{99m}Tc]Tc-PSMA-T4. The developed methodology for the determination of radiochemical purity using the TLC technique may provide an alternative to high-performance liquid chromatography, as this instrument is rarely available in clinics. Different mobile phases and TLC strips were tested. The developed TLC method allows the determination of free ^{99m}Tc]TcO₄⁻, ^{99m}Tc -colloid and ^{99m}Tc -coligand. The results obtained were comparable to those obtained with the HPLC technique.

Obraz uzupełniający: [Przesłany plik](#)