



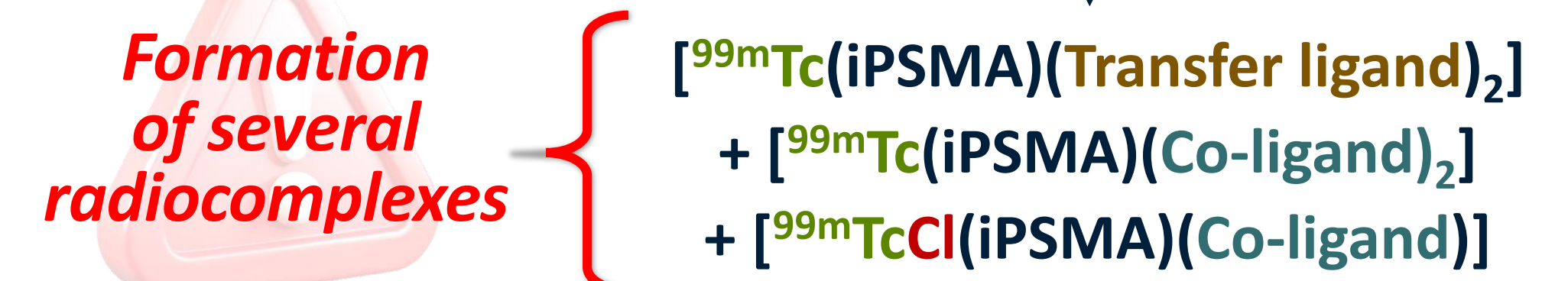
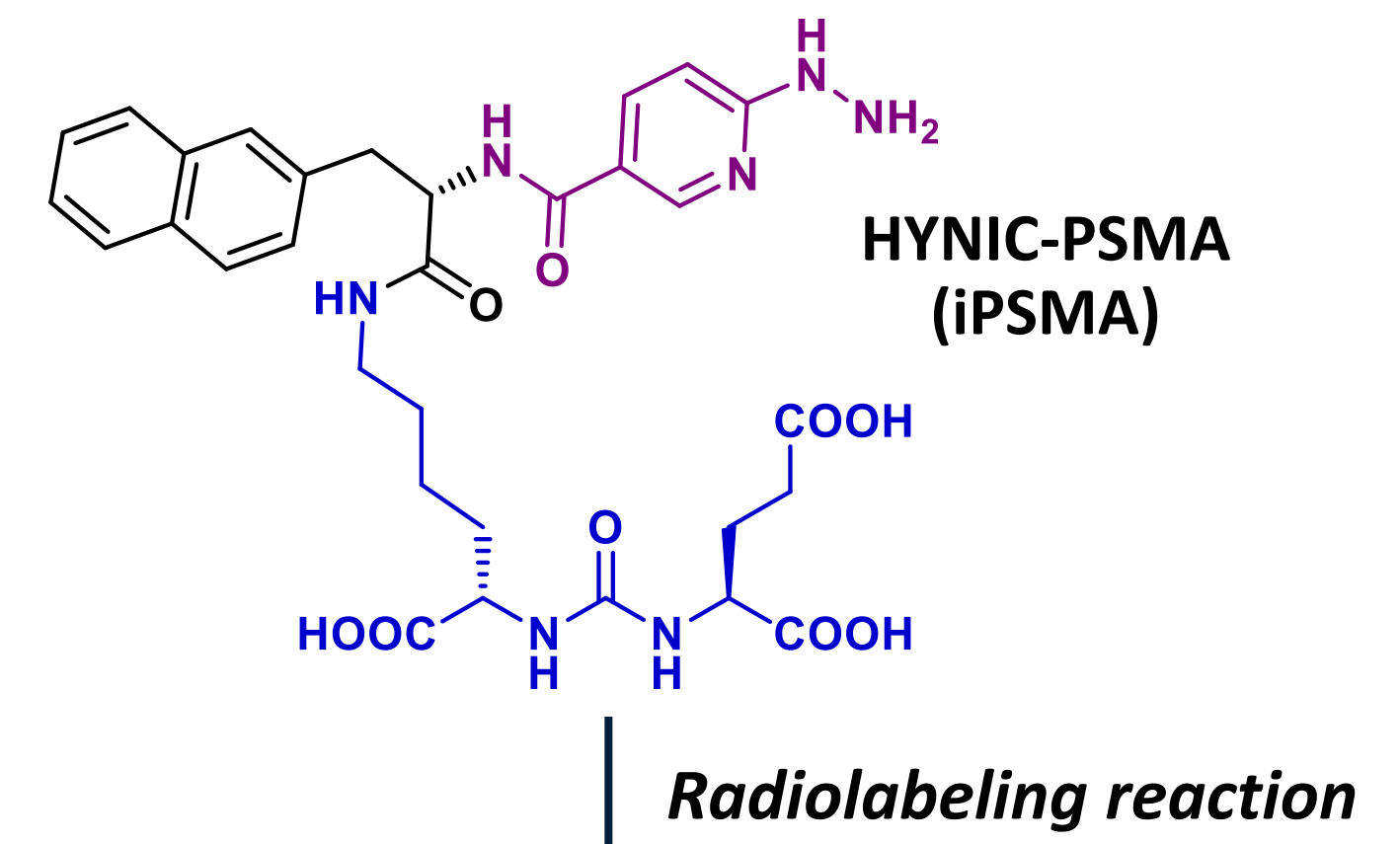
OPTIMIZING ^{99m}Tc -HYNIC-PSMA LABELING TO ACHIEVE A HOMOGENEOUS ISOFORM PROFILE: A STEP TOWARD A STANDARDIZED KIT-BASED FORMULATION

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WHAT WAS DONE

- **Prostate cancer** is the most common cancer in men in France and the second worldwide.¹
- Prostate-specific membrane antigen (**PSMA**) is a membrane glycoprotein overexpressed in up to 95% of advanced prostate cancers, making it a **key molecular target** for diagnostic and therapy.²
- [^{99m}Tc]Tc-iPSMA enables broad SPECT imaging and radioguided surgery techniques, with high target affinity and generator-based availability of ^{99m}Tc .
- Technetium's complex redox chemistry requires **careful control of labeling parameters**.³
↳ Radiolabeling requires **buffer, transfer ligand, coligand, scavenger, reducing agent**.⁴

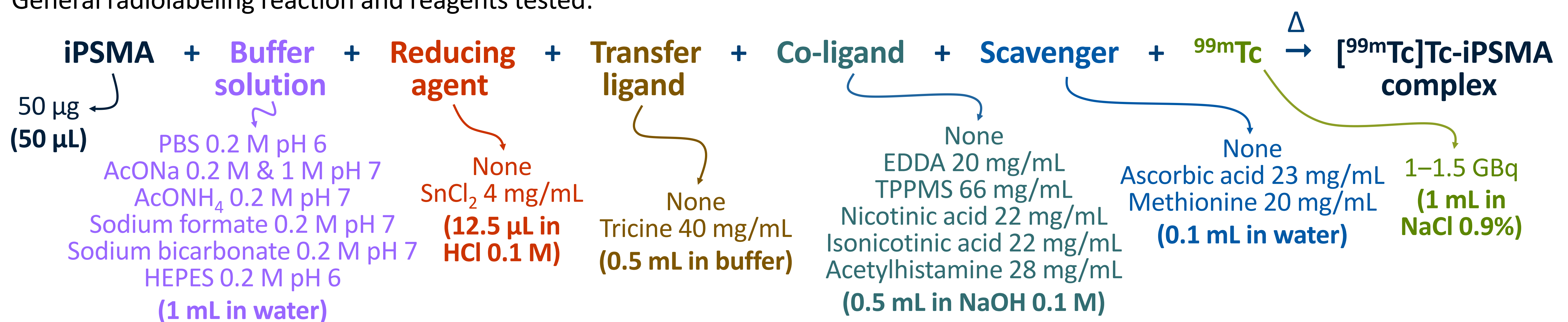


WHY IT WAS DONE

To optimize [^{99m}Tc]Tc-iPSMA radiolabeling conditions to obtain a **single, stable isoform** suitable for clinical translation.

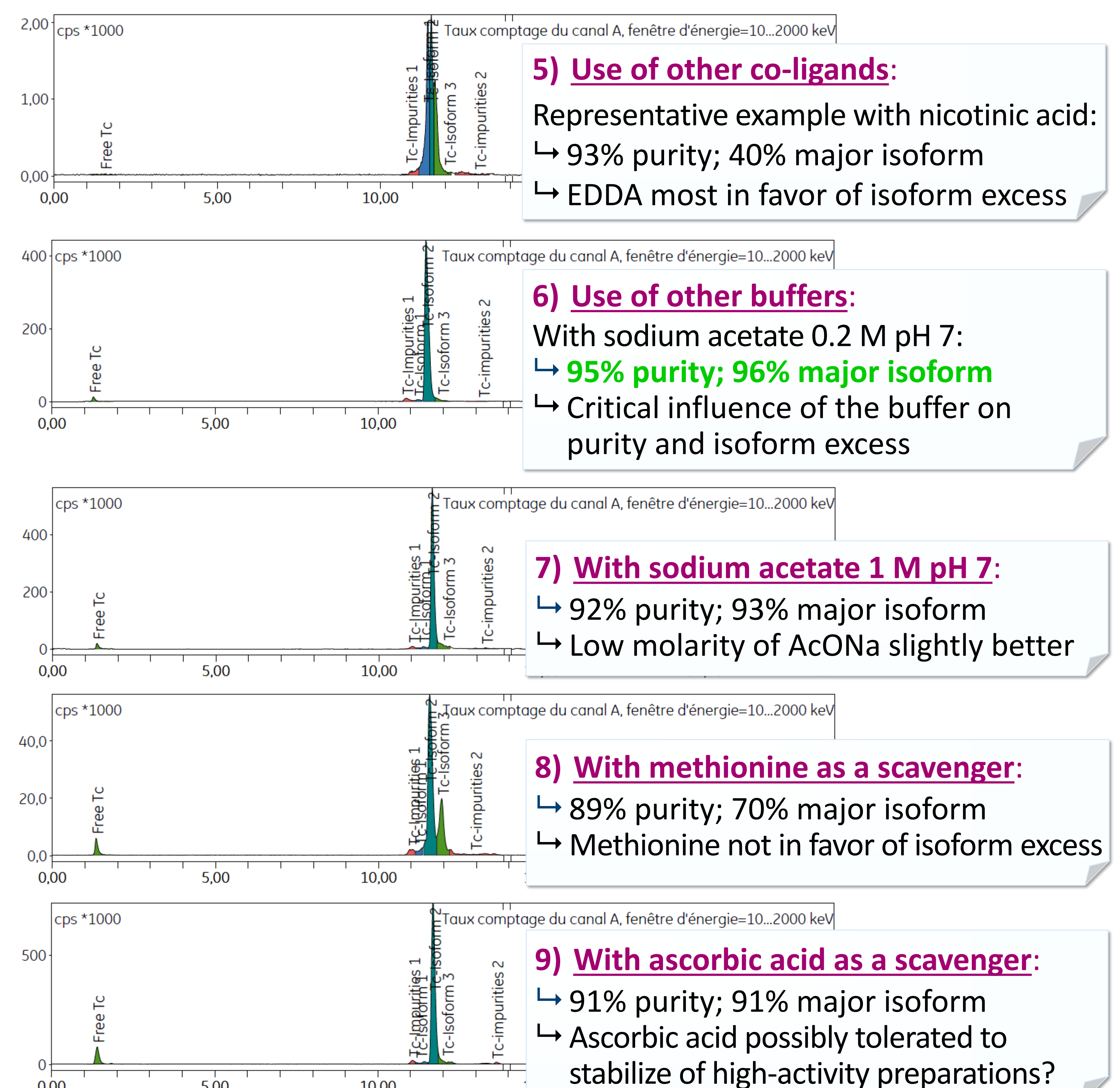
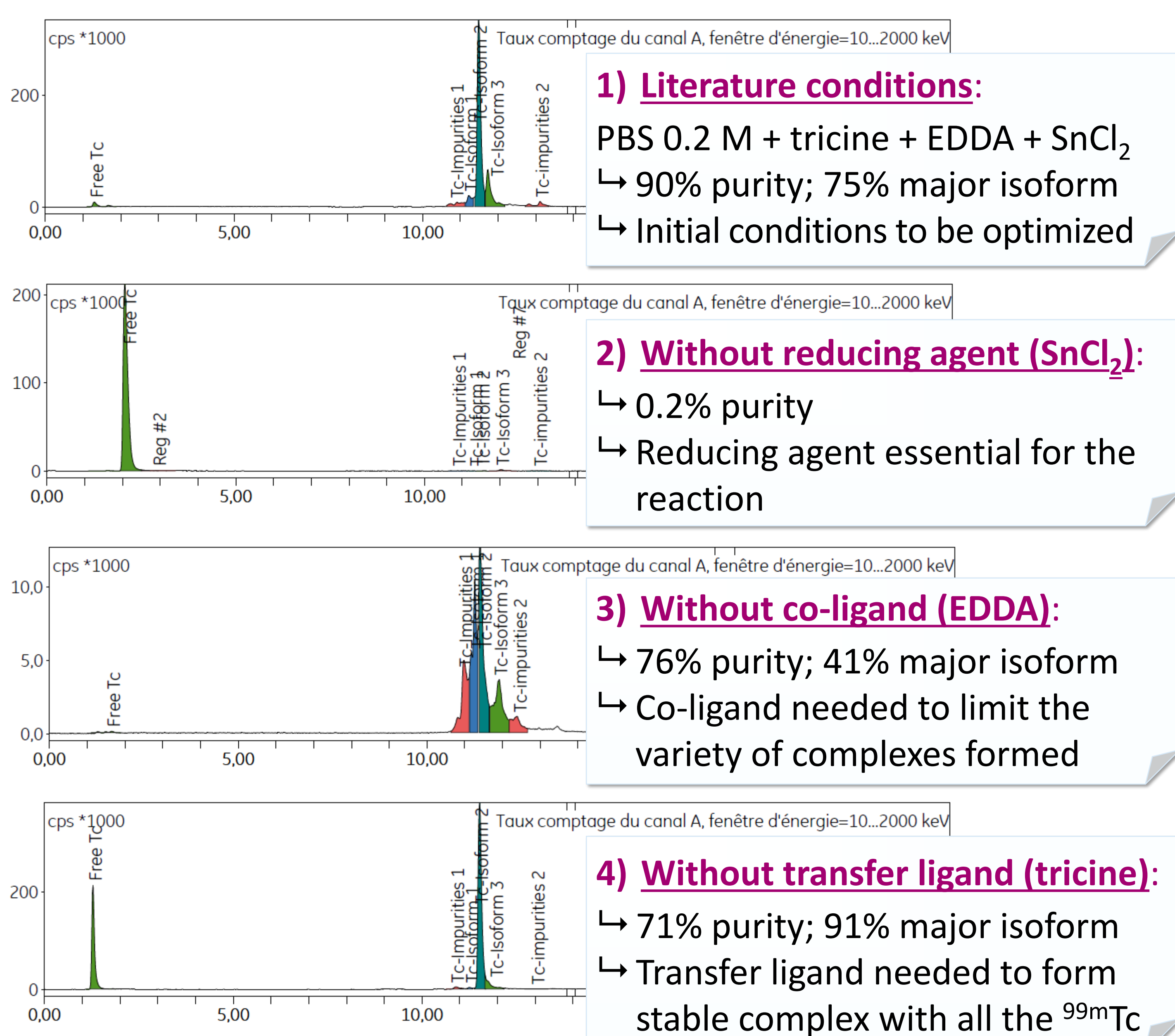
HOW IT WAS DONE

- Modulation of reaction conditions \Rightarrow Primary endpoints: **radiochemical purity** in radio-HPLC and **relative proportion** of each isoform.
- General radiolabeling reaction and reagents tested:



WHAT WAS ACHIEVED

- **21 reaction conditions** tested in triplicate
- **HPLC-guided study** to determine relative proportions of isoforms
- Representative spectra for each reaction parameter:



WHAT IS NEXT

- Best conditions: sodium acetate 0.2 M pH 7 + EDDA + Tricine + SnCl₂, 95 °C, 15 min.
↳ **High RCP (>95%) + single predominant isoform (>96%).**
- Further developments \rightarrow **Lyophilised formulation / Automated radiolabeling protocol.**

