PRODUCT SHEET

CU Sheets

Main Applications

- quality control of Cu labelled compounds

Packing

Order N°.	Form	Sheet size
CUiST-5-1115	CU Sheets	11 x 15cm

Physical and chemical properties

Conditions of utilization

Recommended T of utilization : room temperature

Storage: Dry and dark, T<30°C

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TRISKEM
Expertise in Separation Chemistry

PRODUCT SHEET

CU Sheets

CU Sheets are comprised of iTLC-SG TLC (Thin Layer Chromatography) paper (Agilent) impregnated with the same Cu selective extractant that is also employed in the CU Resin.

TLC papers are frequently used in the quality control (determination of radiochemical purity) of labeled compounds for use in radiopharmacy. In some cases, for example when analyzing Cu-labelled peptides, artefacts can form during such a TLC test when using silica gel based supports. These artefacts can then interfere with the analysis of TLC scans by creating or distorting peaks. While switching to non-silica based TLC supports (e.g. Whatman paper) generally leads to an improvement, this comes with the disadvantage of significantly longer development times and broad peaks.

Svedjehed and Gagnon [1] could show that using CU Sheets a significantly better resolution with short development times can be obtained for Cu labelled peptides.

The authors produced ^{61}Cu via the ^{nat}Ni(d,x)^{61}Cu reaction using a GE PETtrace solid target system and purified the [^{61}Cu]CuCl$_2$ using a TBP/TK201 Resin based method as described previously [2].

Aliquots of [^{61}Cu]CuCl$_2$ were then incubated (90°C; 30 min; pH 4.4 [0.3 M acetate buffer]) with varying low concentrations of NOTA-octreotide trifluoroacetate or NODAGA-RGD trifluoroacetate (ABX). In all cases the ligand concentration was kept below excess to ensure incomplete labelling and thus presence of non-labeled ^{61}Cu.

5µL of the respective ^{61}Cu-labelled peptide were then spotted with origin at 1cm onto strips of 10cm length of: a.) iTLC-SG, b.) Whatman paper (both non-impregnated) and c.) CU Sheets, and developed to at least 7cm in 1:1 MeOH/1 M ammonium acetate.

Fig. 1 shows the result of TLC scans of [^{61}Cu]Cu-NOTA-octreotide with elevated levels of free ^{61}Cu (example 1) and [^{61}Cu]Cu-NOTA-octreotide scans at comparable levels of labelled and unlabelled ^{61}Cu (example 2). The authors reported that similar results were obtained in case of [^{61}Cu]Cu-NODAGA-RGD.

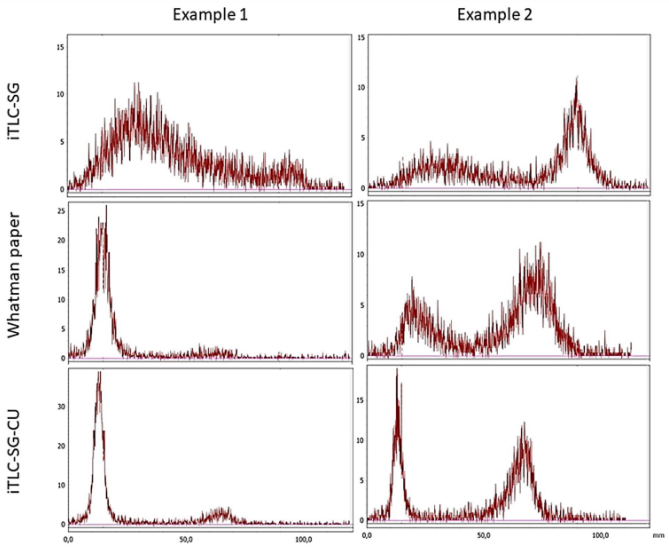

Figure 1. TLC scans of [^{61}Cu]Cu-NOTA-octreotide spotted on: top, iTLC-SG; middle, Whatman paper; bottom extractant-impregnated iTLC-SG. Example 1 notes elevated levels of unlabelled ^{61}Cu, while example 2 notes comparable levels of labelled to unlabelled ^{61}Cu.

Figure 1: TLC scans of [^{61}Cu]Cu-NOTA-octreotide spotted on: top, iTLC-SG; middle, Whatman paper; bottom, CU Sheets. Example 1 notes elevated levels of unlabelled ^{61}Cu, while example 2 notes comparable levels of labelled to unlabelled ^{61}Cu. Taken from [1]

The scans show that in this case using non-impregnated iTLC-SG and Whatman papers results in wide, non-uniform peaks of low resolution. TLC scans using CU Sheets show significantly sharper, separated peaks with the added benefit of short development time compared to the Whatman paper (<10 min instead of ~25-30 min for the Whatman paper). The authors report even greater differences when decreasing the amount of peptide.

Bibliography

[1] J. Svedjehed et al.: "New extractant impregnated iTLC-SG paper facilitates improved TLC analysis for Cu radiolabelled peptides", poster presented at TERACHEM 2022, 14 – 17 September 2022, Bressanone (Italy). Poster available online on our website.

[2] J. Svedjehed, K. Gagnon. A quest for simplicity: Automated cassette-based purification of [^{61}Cu]CuCl$_2$ from solid Ni targets using a single time-list. Nucl Med Biol, 108-109, S1 (2022), P-220, ppS170.