

Supplementary Information

Optimizing Labeling Conditions for Cysteine-Based Peptides with ^{99m}Tc

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Table S1. Conditions for optimizing labeling of peptides C₃SSS- and C₃GGG-LTVSPWY via direct method

Peptide / μg	Buffer	SnCl ₂ / μg	EDTA / μg	Temperature ^a / °C	time ^b / min	Labeling yield / %	Labeling yield up to 2 h ^c / %
GGG (25)	NaOH	20	–	r.t.	30	50	–
GGG (25)	PBS	20	–	r.t.	30	60	–
GGG (25)	NH ₄ OAc	20	–	r.t.	30	100	86
GGG (25)	NaOH	20	–	90	30	40	–
GGG (25)	PBS	20	–	90	30	40	–
GGG (25)	NH ₄ OAc	20	–	90	30	50	–
GGG (25)	NH ₄ OAc	50	–	r.t.	30	100	86
SSS (25)	NH ₄ OAc	50	–	r.t.	30	97	80
SSS (10)	NH ₄ OAc	40	–	r.t.	30	50	–
SSS (10)	NH ₄ OAc	40	100	r.t.	30	60	–

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Table S1. Conditions for optimizing labeling of peptides CSSS- and CGGG-LTVSPWY via direct method (cont.)

Peptide / μg	Buffer	SnCl ₂ / μg	EDTA / μg	Temperature ^a / °C	time ^b / min	Labeling yield / %	Labeling yield up to 2 h ^c / %
SSS (10)	NH ₄ OAc	40	–	r.t.	30	91	40
SSS (10)	NH ₄ OAc	40	–	60	30	75	–
SSS (10)	NH ₄ OAc	100	–	r.t.	30	100	50
SSS (10)	NaHCO ₃	100	–	r.t.	30	70	–

^aTemperature used for labeling peptide with ^{99m}Tc; ^btime used for labeling; ^clabeling yield ^{99m}Tc-labeled peptide assessed up to 2 h. EDTA: Ethylenediaminetetraacetic acid; CCC: peptide with cysteine cysteine cysteine sequence; GGG: peptide with glycine glycine glycine sequence; NH₄OAc: ammonium acetate; PBS: phosphate buffer saline; r.t.: room temperature.

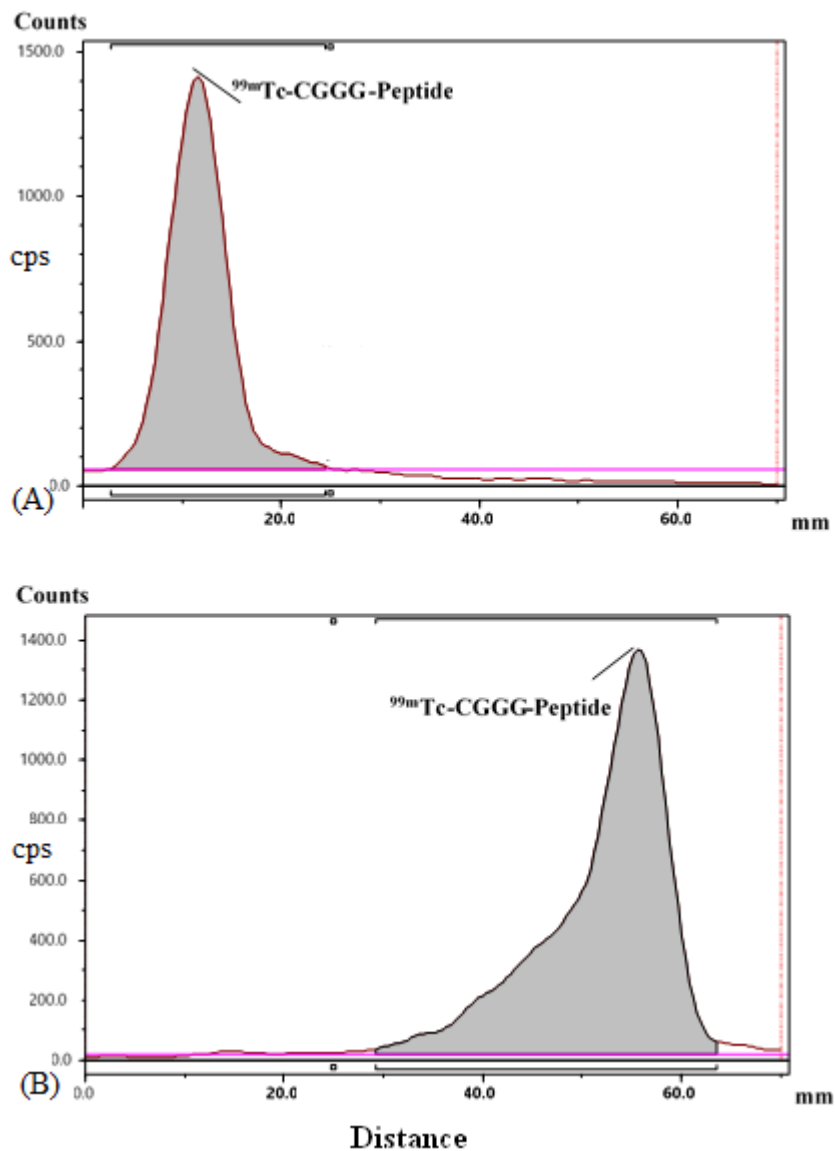


Figure S1. ITLC of ^{99m}Tc -CGGGLTVSPWY peptide in PBS solvent (A); and pyridine/acetic acid/ H_2O solvent (B) for 0 min after labeling. For PBS, free $^{99m}\text{TcO}_4^-$ and ^{99m}Tc -gluconate migrate with the solvent front ($R_f = 1.0$), while peptide-bound ^{99m}Tc and colloid remain at the application point ($R_f = 0.0$). For pyridine/acetic acid/ H_2O system the colloids ($R_f = 0.0$ - 0.3) remain at the application point ($R_f = 1.0$) and peptide-bound ^{99m}Tc , free $^{99m}\text{TcO}_4^-$ and ^{99m}Tc -gluconate migrate with the solvent front.

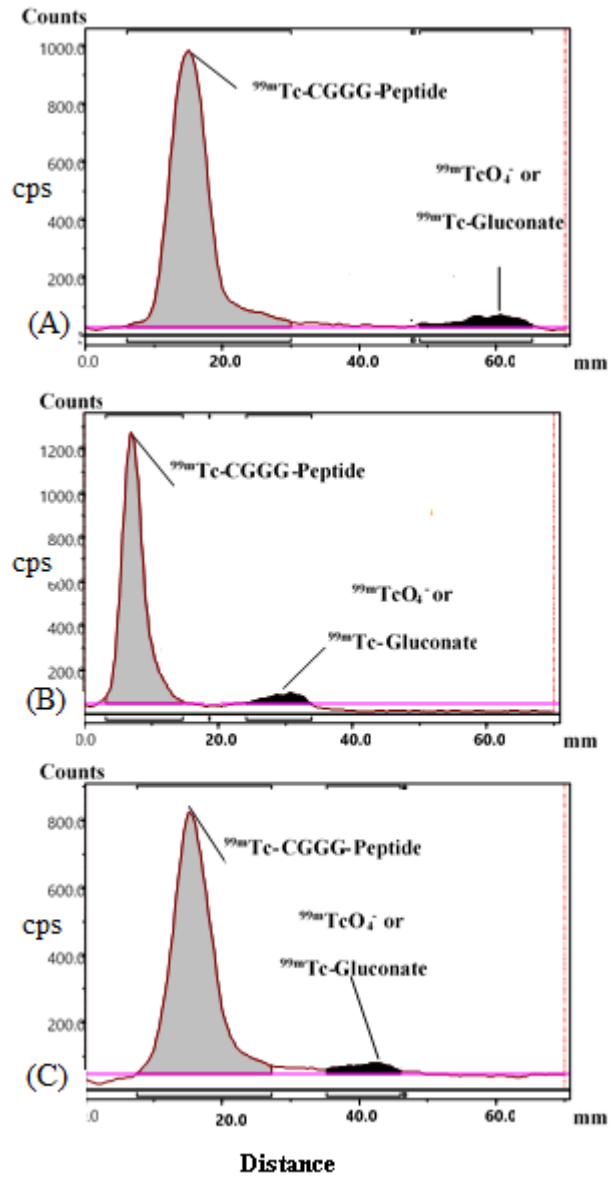


Figure S2. ITLC analysis of $^{99m}\text{Tc-CGGGLTVSPWY}$ peptide stability for 1 h (A); 2 h (B); and 4 h (C) after labeling in PBS solvent. Free $^{99m}\text{TcO}_4^-$ and $^{99m}\text{Tc-gluconate}$ migrate with the solvent front ($R_f = 1.0$), while peptide-bound ^{99m}Tc and colloid remain at the application point ($R_f = 0.0$).