D-amino acid peptide residualizing agents for protein radioiodination: effect of aspartate for glutamate substitution

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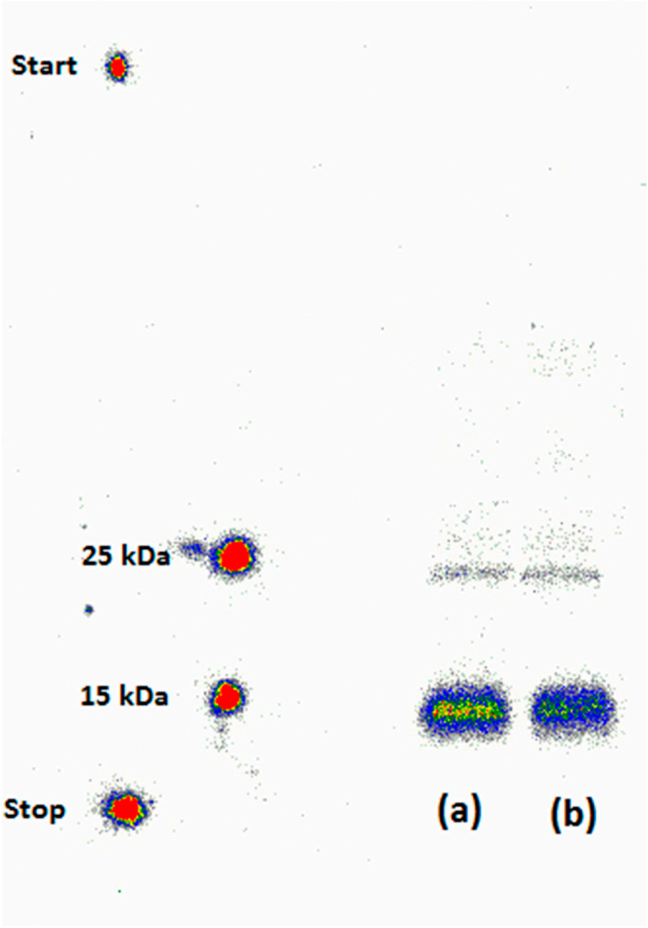

Figure S1. Non-reducing SDS-PAGE/phosphor image profiles of 5F7 sdAb: (**a**) [^{125}I]IB-Mal-D-GDDDK-5F7; (**b**) [^{131}I]IB-Mal-D-GEEEK-5F7. Two bands are visible with masses corresponding to about 12 kDa and 24 kDa, as this sdAb exists as a mixture of monomer and dimer as described previously [17].

Table S1. Paired-label biodistribution of D-[^{125}I]YDDDD and D-[^{131}I]YEEEE in Balb/c mice.

Organ/Tissue	% ID/g [1]				
	0.5 h	1 h	2 h	4 h	24 h
D-[^{125}I]YDDDD					
Liver	0.57 ± 0.05	0.36 ± 0.03	0.21 ± 0.02	0.19 ± 0.02	0.05 ± 0.01
Spleen	0.40 ± 0.04	0.18 ± 0.02	0.08 ± <0.01	0.09 ± 0.02	0.04 ± 0.01
Lungs	1.13 ± 0.11	0.47 ± 0.08	0.24 ± 0.09	0.09 ± 0.03	0.02 ± <0.01
Heart	0.47 ± 0.06	0.17 ± 0.03	0.06 ± 0.01	0.04 ± 0.01	0.01 ± <0.01
Kidneys	2.84 ± 0.52	1.20 ± 0.30	0.73 ± 0.07	0.57 ± 0.08	0.18 ± 0.05
Stomach	0.93 ± 0.14	0.67 ± 0.20	0.44 ± 0.15	0.34 ± 0.13	0.06 ± 0.03
Small intestine	0.47 ± 0.11 [2]	0.30 ± 0.05 [2]	0.14 ± 0.05	0.09 ± 0.03	0.06 ± 0.05
Large intestine	0.35 ± 0.15 [2]	0.16 ± 0.04	0.16 ± 0.06	0.19 ± 0.01 [2]	0.06 ± 0.02 [2]
Thyroid	0.05 ± 0.01	0.05 ± 0.04	0.07 ± 0.03 [2]	0.07 ± 0.03	0.11 ± 0.03
Muscle	0.62 ± 0.14	0.53 ± 0.19	0.20 ± 0.16	0.09 ± 0.06 [2]	0.03 ± 0.02 [2]
Blood	1.10 ± 0.22	0.31 ± 0.04	0.10 ± 0.02	0.06 ± 0.01	<0.01
Bone	6.31 ± 1.10	4.85 ± 2.73	3.01 ± 0.61	1.97 ± 0.51	1.16 ± 0.33
Brain	0.06 ± 0.01	0.08 ± 0.06	0.02 ± 0.01	0.01 ± <0.01	<0.01
D-[^{131}I]YEEEE					
Liver	0.44 ± 0.04	0.22 ± 0.02	0.11 ± 0.01	0.11 ± 0.01	0.02 ± <0.01
Spleen	0.33 ± 0.02	0.13 ± 0.02	0.06 ± <0.01	0.05 ± 0.02	0.02 ± <0.01
Lungs	0.92 ± 0.10	0.32 ± 0.05	0.18 ± 0.12	0.06 ± 0.03	0.02 ± <0.01
Heart	0.42 ± 0.06	0.12 ± 0.02	0.04 ± <0.01	0.03 ± 0.01	<0.01
Kidneys	7.60 ± 1.40	5.39 ± 1.69	5.27 ± 0.48	4.43 ± 0.81	0.88 ± 0.09
Stomach	0.79 ± 0.13	0.54 ± 0.16	0.34 ± 0.11	0.27 ± 0.10	0.05 ± 0.03
Small intestine	0.47 ± 0.12	0.31 ± 0.06	0.13 ± 0.05	0.08 ± 0.03	0.05 ± 0.04
Large intestine	0.32 ± 0.12	0.14 ± 0.04	0.16 ± 0.05	0.19 ± 0.01	0.06 ± 0.02
Thyroid	0.03 ± 0.02	0.04 ± 0.02	0.05 ± 0.01	0.04 ± 0.02	0.08 ± 0.02
Muscle	0.44 ± 0.05	0.40 ± 0.21	0.07 ± 0.06	0.06 ± 0.03	0.01 ± <0.01
Blood	0.99 ± 0.20	0.22 ± 0.04	0.06 ± 0.01	0.04 ± 0.01	0.01 ± <0.01
Bone	1.83 ± 1.01	0.49 ± 0.23	0.25 ± 0.14	0.13 ± 0.02	0.07 ± 0.02
Brain	0.05 ± 0.01	0.06 ± 0.05	0.01 ± <0.01	0.01 ± <0.01	<0.01

[1] Values are mean % ID/g ± SD (n = 4) except in the case of thyroid for which % ID/organ values given; [2] No significant difference in uptake of the two tracers (P >0.05).

Table S2. Paired-label biodistribution of 5F7 sdAb labeled with [^{125}I]IB-Mal-D-GDDDK and [^{131}I]IB-Mal-D-GEEEK in Balb/c mice.

Organ/Tissue	%ID/g [1]				
	1h	2h	4h	8h	24h
[^{125}I]IB-Mal-D-GDDDK					
Liver	3.34 ± 0.31	2.98 ± 0.20	2.84 ± 0.21	2.66 ± 0.25	1.65 ± 0.20
Spleen	2.35 ± 0.60	2.21 ± 0.16	2.38 ± 0.42	2.57 ± 0.25	2.21 ± 0.47
Lungs	6.34 ± 1.31	5.44 ± 1.43	4.02 ± 1.10	2.39 ± 1.00	1.40 ± 0.48
Heart	0.47 ± 0.06	0.27 ± 0.04	0.20 ± 0.04	0.12 ± 0.01	0.07 ± 0.01 [2]
Kidneys	62.3 ± 13.7	54.9 ± 5.4	58.2 ± 5.2	34.1 ± 5.6	12.5 ± 2.4
Stomach	0.60 ± 0.27 [2]	0.58 ± 0.20 [2]	0.43 ± 0.15 [2]	0.17 ± 0.03 [2]	0.07 ± 0.03 [2]
Small intestine	0.79 ± 0.13	0.94 ± 0.21	0.35 ± 0.08	0.17 ± 0.02	0.08 ± 0.02 [2]
Large intestine	0.22 ± 0.07	0.24 ± 0.02 [2]	0.62 ± 0.07	0.81 ± 0.12	0.12 ± 0.05
Thyroid	0.06 ± 0.06	0.05 ±<0.01 [2]	0.03 ± 0.01	0.03 ±<0.01 [2]	0.08 ± 0.03 [2]
Muscle	0.30 ± 0.06	0.26 ± 0.10	0.10 ± 0.02	0.06 ± 0.01 [2]	0.04 ± 0.01 [2]
Blood	0.91 ± 0.09	0.73 ± 0.41	0.36 ± 0.18	0.15 ± 0.03	0.06 ± 0.01
Bone	0.82 ± 0.28 [2]	0.60 ± 0.15 [2]	0.34 ± 0.04 [2]	0.27 ± 0.07	0.31 ± 0.10
Brain	0.05 ± 0.02	0.03 ± 0.01	0.01 ±<0.01	0.02 ± 0.01 [2]	<0.01
[^{131}I]IB-Mal-D-GEEEK					
Liver	1.80 ± 0.15	1.72 ± 0.31	1.37 ± 0.09	1.10 ± 0.12	0.54 ± 0.07
Spleen	1.29 ± 0.22	1.04 ± 0.08	0.87 ± 0.09	0.80 ± 0.14	0.43 ± 0.10
Lungs	1.78 ± 0.19	1.45 ± 0.10	0.77 ± 0.29	0.28 ± 0.03	0.17 ± 0.04
Heart	0.67 ± 0.12	0.40 ± 0.06	0.26 ± 0.05	0.14 ± 0.01	0.07 ± 0.02
Kidneys	128.6 ± 23.7	107.3 ± 10.3	106.3 ± 8.5	53.7 ± 7.2	20.3 ± 2.4
Stomach	0.60 ± 0.18	0.59 ± 0.21	0.42 ± 0.14	0.16 ± 0.02	0.07 ± 0.02
Small intestine	0.66 ± 0.10	0.71 ± 0.16	0.29 ± 0.08	0.13 ± 0.01	0.07 ± 0.01
Large intestine	0.26 ± 0.06	0.24 ± 0.03	0.45 ± 0.03	0.47 ± 0.11	0.09 ± 0.04
Thyroid	0.08 ± 0.05	<0.01	0.05 ± 0.02	0.03 ± 0.01	0.07 ± 0.03
Muscle	0.35 ± 0.05	0.31 ± 0.08	0.13 ± 0.02	0.07 ± 0.02	0.04 ± 0.01
Blood	1.60 ± 0.18	1.17 ± 0.30	0.66 ± 0.24	0.30 ± 0.07	0.12 ± 0.01
Bone	0.75 ± 0.23	0.57 ± 0.12	0.28 ± 0.04	0.13 ± 0.05	0.16 ± 0.04
Brain	0.06 ± 0.01	0.05 ± 0.01	0.03 ±<0.01	0.01 ± 0.01	0.01 ±<0.01

[1] Values are mean % ID/g ± SD (n = 5) except in the case of thyroid for which % ID/organ values given; [2] No significant difference in uptake of the two tracers (P >0.05).