

Supplementary material

Table S1 Determined relative abundances and corresponding standard deviations of alpha lactalbumin in different mixtures by ESI-MS.

Mix	protein ratios	label	expected relative abundances	determined relative abundances by HPLC/ESI-MS	determined relative abundances by IRMPD
A	1	Eu-MeCAT-IA	47.8 %	42.2 % ± 19.7 %	34.7 % ± 4.5%
	1	Tb-MeCAT-IA	100.0 %	93.8 % ± 8.1%	95.7% ± 7.2 %
	1	Ho-MeCAT-IA	100.0 %	87.4 % ± 15.5 %	87.7% ± 15.4 %
	1	Tm-MeCAT-IA	100.0 %	83.0 % ± 15.9 %	88.6% ± 11.7 %
	1	Lu-MeCAT-IA	97.4 %	79.5 % ± 11.2 %	51.6 % ± 10.2%
B	0.33	Eu-MeCAT-IA	15.9 %	9.9 % ± 3.0 %	9.8 % ± 2.3 %
	0.66	Tb-MeCAT-IA	66.7 %	48.8 % ± 6.2%	52.0 % ± 6.0 %
	1	Ho-MeCAT-IA	100.0 %	100.0 % ± 0.0 %	100 % ± 0.0 %
	0.66	Tm-MeCAT-IA	66.7 %	61.0 % ± 4.2 %	64.2 % ± 3.3 %
	0.33	Lu-MeCAT-IA	32.5 %	28.1 % ± 4.0 %	17.7 % ± 3.6 %
C	100	Eu-MeCAT-IA	49.1 %	43.1 % ± 5.2 %	46.2 % ± 9.6 %
	10	Tb-MeCAT-IA	10.3 %	4.0 % ± 1.2 %	7.0 % ± 1.7 %
	1	Ho-MeCAT-IA	1.0 %	1.6 % ± 1.8 %	2.0 % ± 2.6 %
	10	Tm-MeCAT-IA	10.3 %	4.3 % ± 1.0 %	8.7 % ± 1.4 %
	100	Lu-MeCAT-IA	100.0%	100.0% ± 0.0%	100 % ± 0.0 %

Table S2 Determined relative amounts and corresponding standard deviations of alpha lactalbumin in different mixtures using different strategies.

Mix	protein ratios	label	HPLC/ESI-MS	IRMPD	HPLC/ICP-MS	ICP-MS
A	1	Eu-MeCAT-IA	0.81 (± 0.09)	0.73 (± 0.07)	0.87 (± 0.05)	0.85 (± 0.01)
	1	Tb-MeCAT-IA	0.93 (± 0.06)	0.96 (± 0.07)	0.90 (± 0.08)	0.92 (± 0.01)
	1	Ho-MeCAT-IA	1.00	1.00	1.00	1.00
	1	Tm-MeCAT-IA	0.95 (± 0.03)	1.02 (± 0.07)	0.93 (± 0.01)	0.96 (± 0.00)
	1	Lu-MeCAT-IA	0.92 (± 0.07)	0.59 (± 0.04)	0.95 (± 0.02)	0.99 (± 0.00)
B	0.33	Eu-MeCAT-IA	0.16 (± 0.01)	0.21 (± 0.04)	0.28 (± 0.04)	0.27 (± 0.01)
	0.66	Tb-MeCAT-IA	0.48 (± 0.07)	0.52 (± 0.05)	0.45 (± 0.05)	0.58 (± 0.00)
	1	Ho-MeCAT-IA	1.00	1.00	1.00	1.00
	0.66	Tm-MeCAT-IA	0.61 (± 0.02)	0.64 (± 0.01)	0.61 (± 0.04)	0.64 (± 0.00)
	0.33	Lu-MeCAT-IA	0.28 (± 0.00)	0.18 (± 0.01)	0.32 (± 0.03)	0.33 (± 0.00)
C	100	Eu-MeCAT-IA	113.88 (± 3.72)	78.20 (± 15.66)	76.29 (± 13.62)	69.40 (± 0.76)
	10	Tb-MeCAT-IA	5.44 (± 0.51)	5.54 (± 1.32)	5.02 (± 1.26)	4.75 (± 0.08)
	1	Ho-MeCAT-IA	1.00	1.00	1.00	1.00
	10	Tm-MeCAT-IA	6.13 (± 2.17)	7.02 (± 1.44)	5.30 (± 0.56)	5.51 (± 0.11)
	100	Lu-MeCAT-IA	152.34 (± 57.70)	83.09 (± 21.24)	81.71 (± 12.51)	79.50 (± 1.31)