Supplementary material

Surfactant-mediated liquid chromatographic modes with sodium dodecyl sulphate for the analysis of basic drugs

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Table S1. Structures, dissociation constants (pK_a) in water, and octanol-water partition coefficients (log $P_{o/w}$) of the studied β-adrenoceptor antagonists.

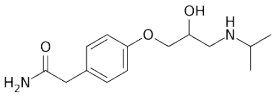
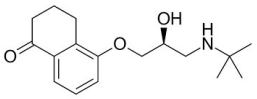
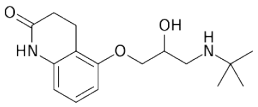
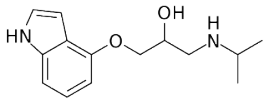
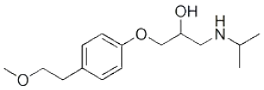
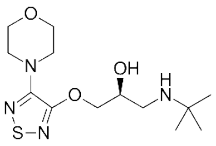
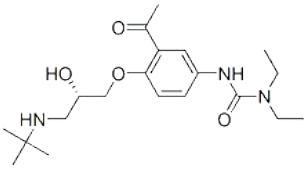
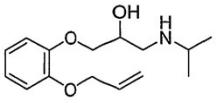
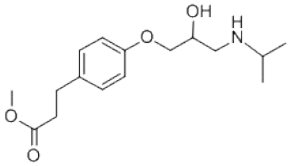
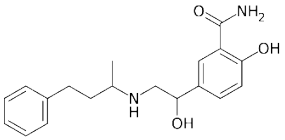
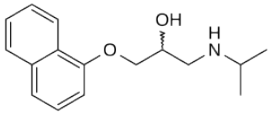
Compound	Code	Structure	pK_a [a]	log $P_{o/w}$ [b]
Atenolol	1		9.6	-0.026
Acebutolol	2		9.2	1.19
Carteolol	3		NA	1.42
Pindolol	4		8.8, 9.7	1.48
Metoprolol	5		9.7	1.69
Timolol	6		9.2	1.75
Celiprolol	7		NA	1.93
Oxprenolol	8		9.5	1.83
Esmolol	9		NA	2.00

Table S1 (continued).

Compound	Code	Structure	pK_a [a]	log $P_{o/w}$ [b]
Labetalol	10		7.4, 8.7	2.41
Propranolol	11		9.5	2.60

[a] Ref. [30]. NA: not available

[b] Ref. [31]. Values calculated from the structure by applying the on-line interactive LOGKOW program of the Environmental Science Centre of Syracuse Research Corporation.

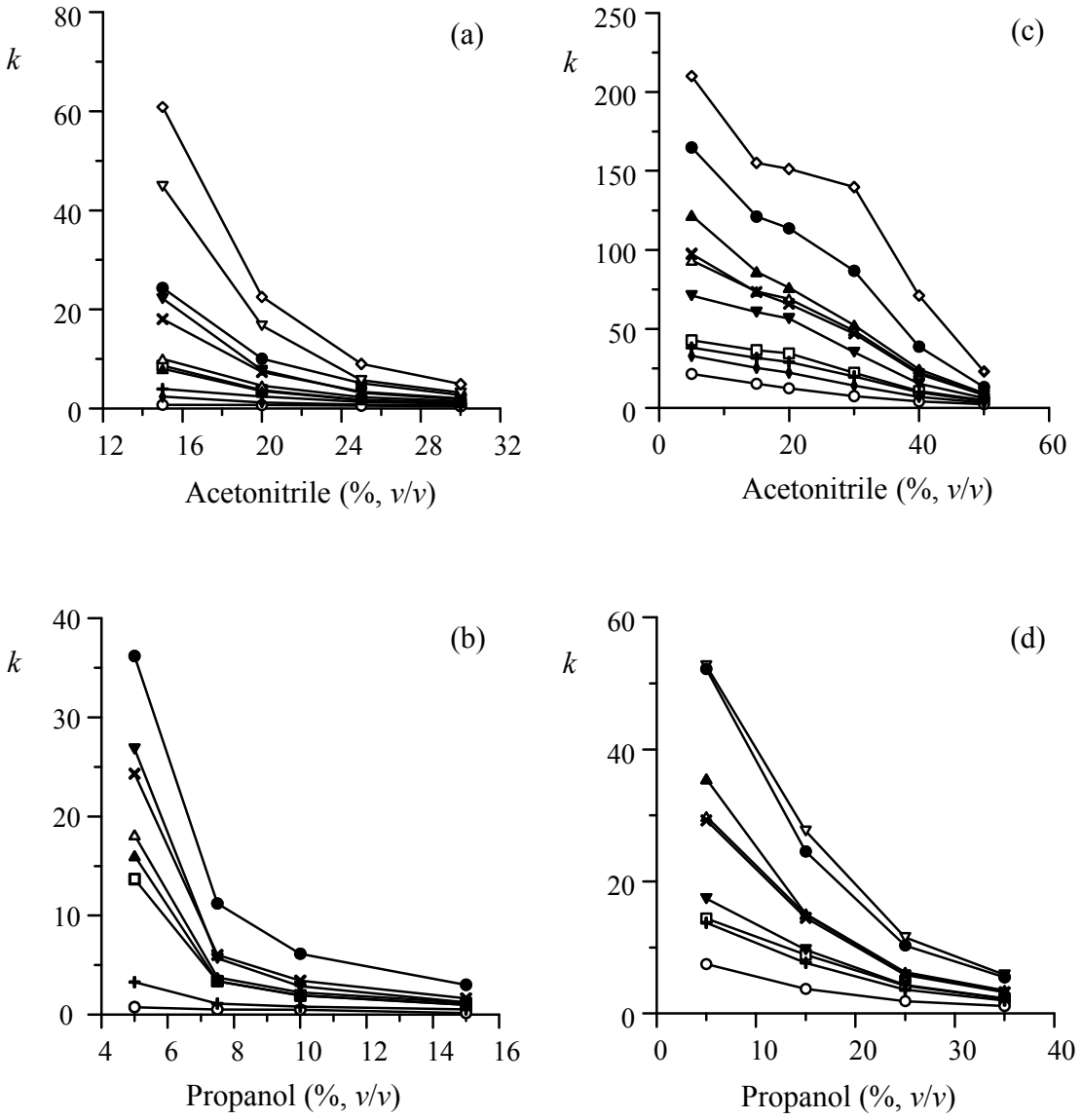


Figure S1. Variation of retention in RPLC (a,b) and MLC/HSLC with 0.075 M SDS (c,d), at increasing concentrations of acetonitrile (a,c), and 1-propanol (b,d). Solute identity: (□) acebutolol, (○) atenolol, (♦) carteolol, (▼) celiprolool, (x) esmolol, (▽) labetalol, (Δ) metoprolol, (●) oxprenolol, (+) pindolol, (◊) propranolol, and (▲) timolol.

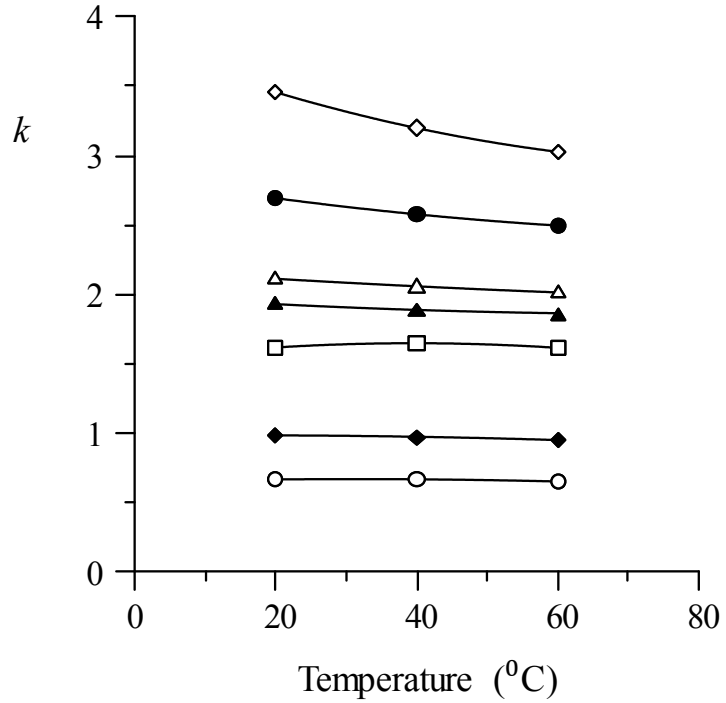


Figure S2. Variation of retentions factors at increasing temperature, using the standard microemulsion mobile phase composition: 0.114 M SDS, 1.14% (*v*/*v*) octane, 8.2% (*v*/*v*) 1-butanol and 0.5% (*v*/*v*) TFA. See Fig. S1 for solute identity.

Table S2. Efficiencies in RPLC, MLC and HSLC.[a]

	RPLC		MLC			HSLC			
Mobile phase	20% ACN	15% PrOH	0.15 M SDS 5% ACN	0.15 M SDS 15% ACN	0.1125 M SDS 10% PrOH	0.15 M SDS 30% ACN	0.15 M SDS 50% ACN	0.15 M SDS 25% PrOH	0.15 M SDS 35% PrOH
Acebutolol	1577	2202	1811	2040	2205	3919	2672	1160	770
Alprenolol	1328		1676	2219		5664	8486		
Atenolol	997	1976	2588	1552	1711	2598	1711	704	338
Carteolol	943		2103	1915		3525	2196		
Celiprolol	2139	2209	1879	2184	2171	4377	3221	1147	787
Esmolol	1848	2129	1577	2384	2868	5209	4692	1459	904
Labetalol	1604	1021	1711	1839	2160	5075	5907	1696	1092
Metoprolol	1797	1806	683	2499	2930	5449	5296	1635	1013
Nadolol	986			1457		4024	2612		
Oxprenolol	1411	1069	2080	2571	3081	6125	6830	2123	1350
Pindolol	1670	4030	2068	2157	2337	4187	2719	1110	822
Propranolol	1228		974	2023		5285	7997		
Timolol	1679	1995	2464	2457	3001	5459	6165	1628	1084
Mean	1500 ± 300	2000± 900	1800 ± 500	2100 ± 300	2500 ± 500	5000 ± 1000	4700 ± 2300	1400 ± 400	900 ± 300

[a] Ref. [43].

Table S3. Efficiencies in MELC.

	MELC			
Mobile phase	0.114 M SDS / 1.14% octane / 8.2% 1-butanol	0.173 M SDS / 1.14% octane / 8.2% 1-butanol	0.114 M SDS / 0.28% octane / 8.2% 1-butanol	0.114 M SDS / 1.14% octane / 17.3% 1-butanol
Acebutolol	977	973	1421	1328
Atenolol	1022	1266	1107	2218
Carteolol	874	831	1266	1061
Metoprolol	1256	1271	1871	1366
Oxprenolol	1393	1138	2053	1457
Propranolol	1315	1279	1987	1403
Timolol	1162	1145	1644	1446
Mean	1100 ± 190	1130 ± 170	1600 ± 400	1500 ± 400

[a] Ref. [43].

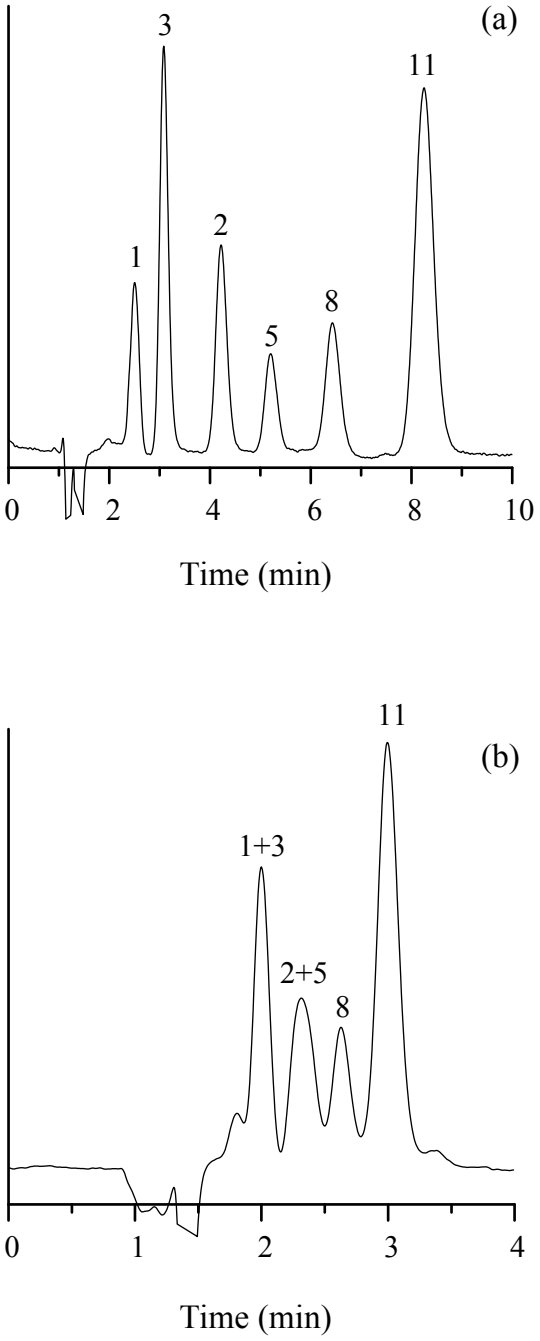


Figure S3. Experimental chromatograms obtained for mixtures of β-adrenoceptor antagonists in MELC with: (a) 0.114 M SDS / 0.28% octane / 8.2% 1-butanol, and (b) 0.114 M SDS / 1.14% octane / 17.3% 1-butanol, using the XTerra column. See Section 2.1 for peak identity.

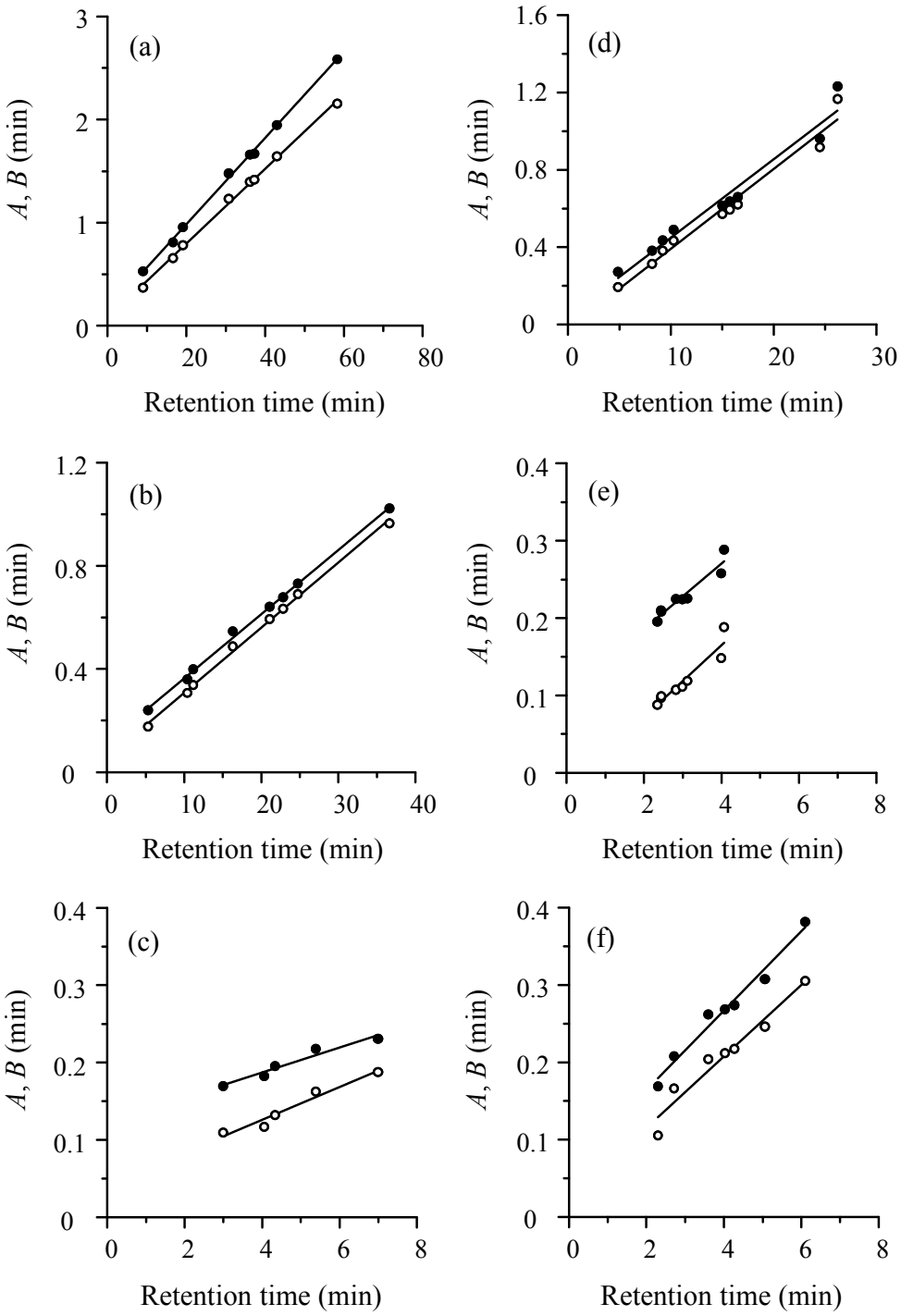


Figure S4. Half-width plots (left (○) and right (●)) for the β-adrenoceptor antagonists eluted with: (a) MLC (0.15 M SDS/15% acetonitrile), (b) HSLC (0.15 M SDS/30% acetonitrile), (c) HSLC (0.15 M SDS/50% acetonitrile), (d) MLC (0.1125 M SDS/10% 1-propanol), (e) HSLC (0.15 M SDS/35% 1-propanol), (f) MELC (0.114 M SDS/1.14% octane/8.2% 1-butanol).