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APPENDIX A

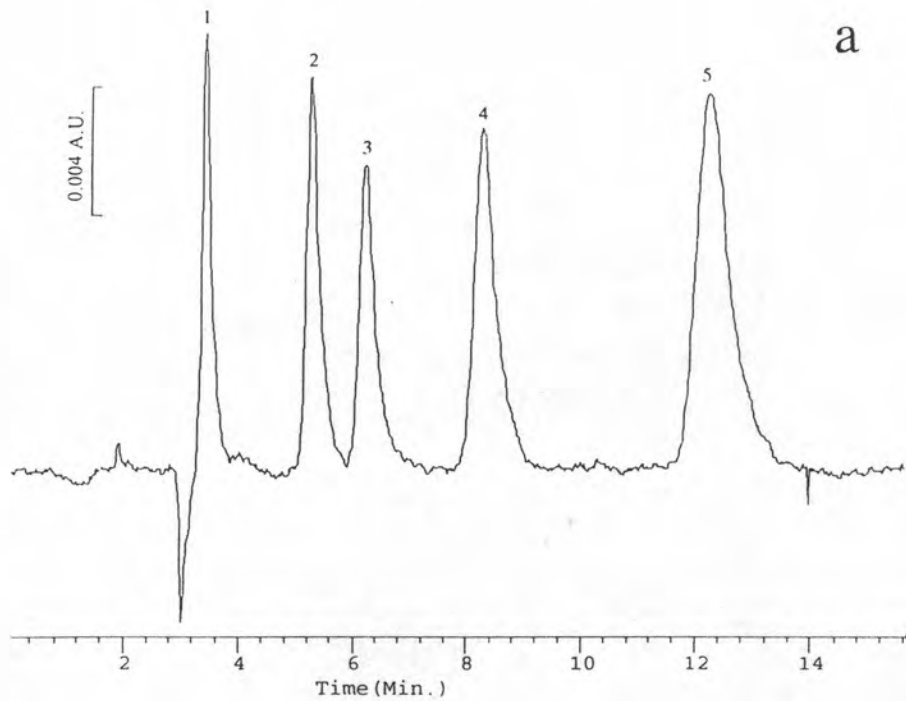


Figure A1 Chromatograms of standard mixtures of phenols dissolved in 2% methanol (a) , 10% methanol (b) , 20% methanol (c) , 30% methanol (d) , 40% methanol (e) , 50% methanol (f) , 60% methanol (g) , 70% methanol (h) , 80% methanol (i) , 90% methanol (j) and pure methanol (k) on reversed phase column. Peak identification and Chromatographic conditions as given in Figure 4.9

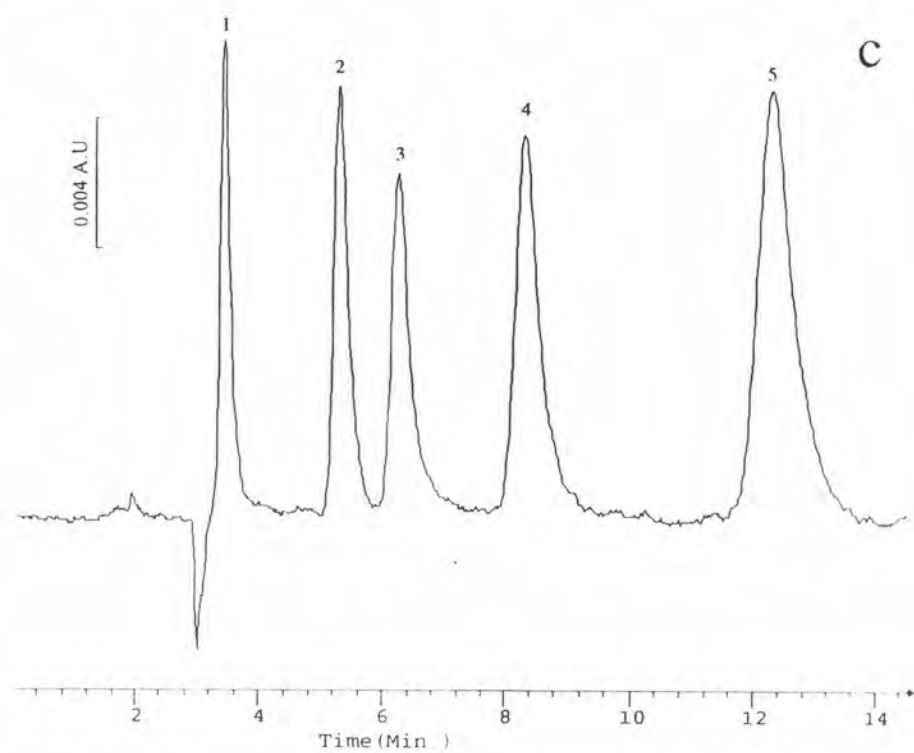
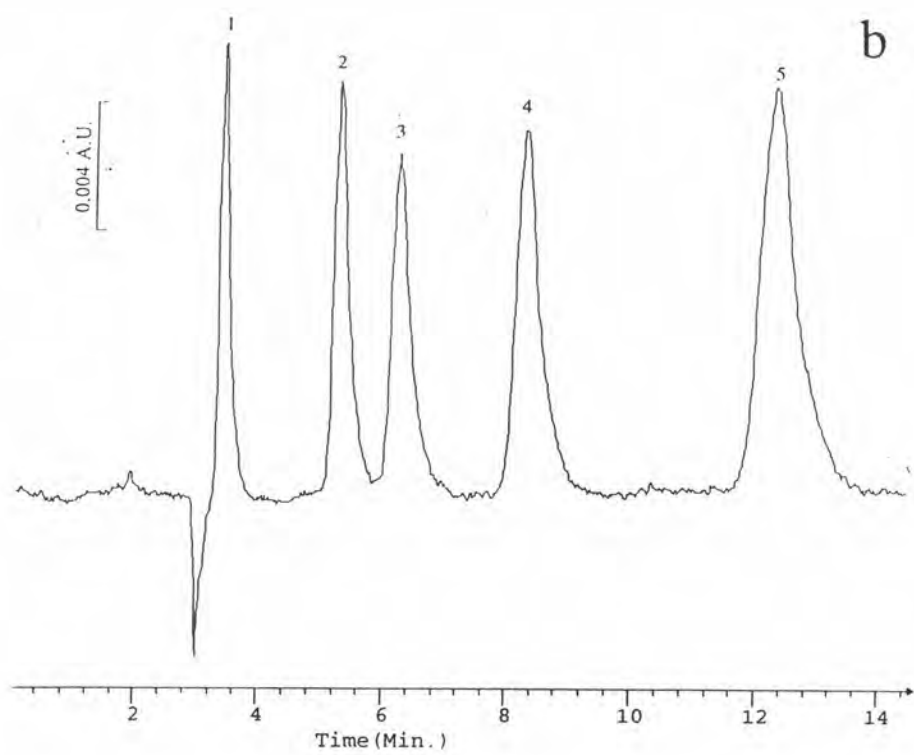


Figure A1. (continued)

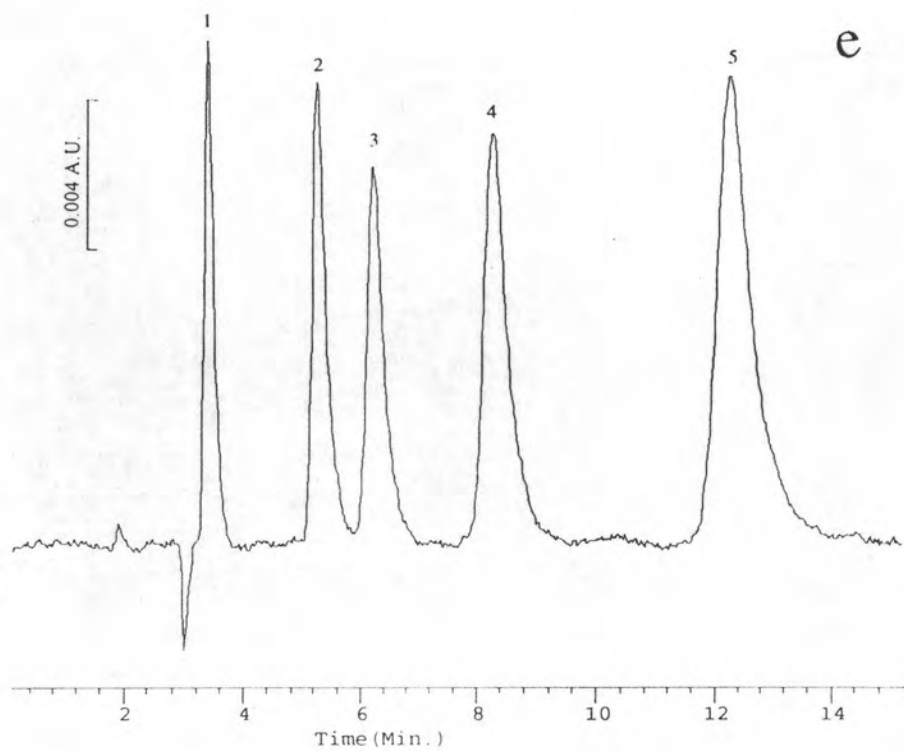
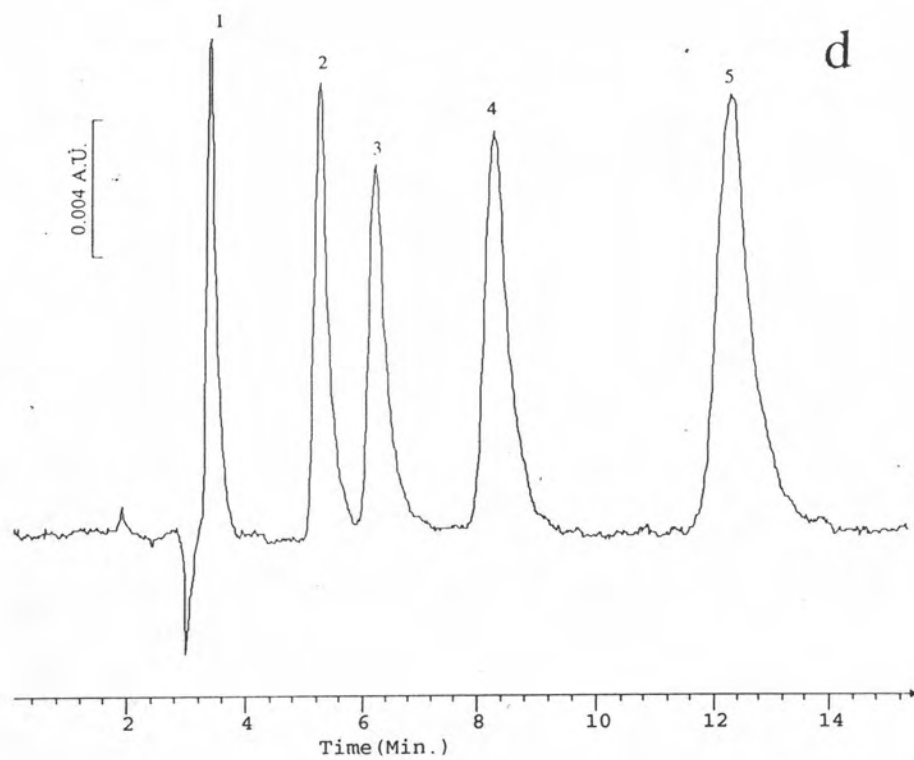


Figure A1. (continued)

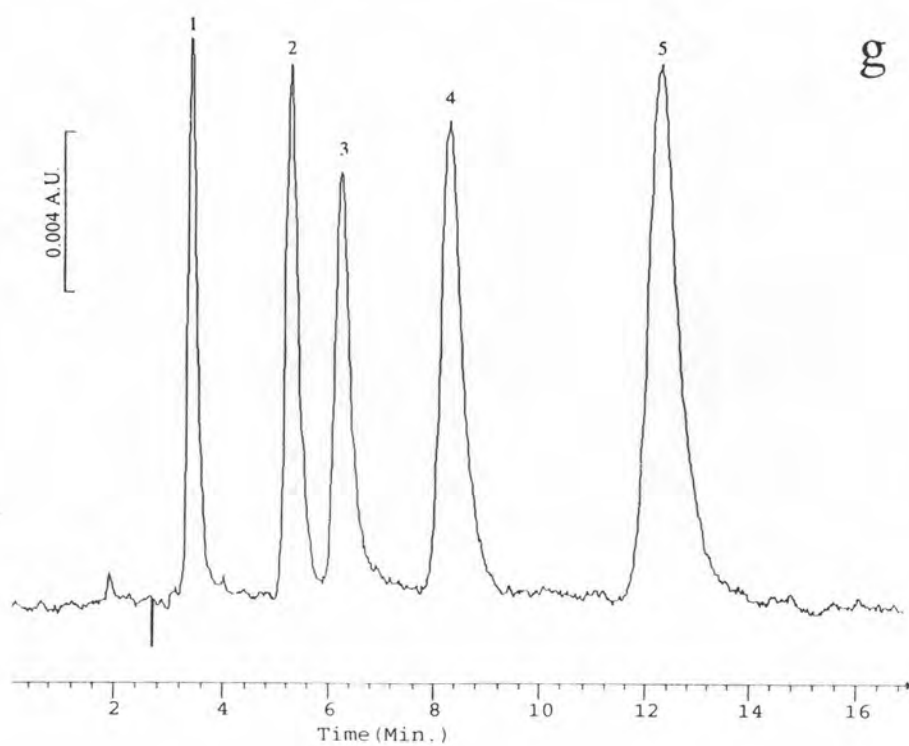
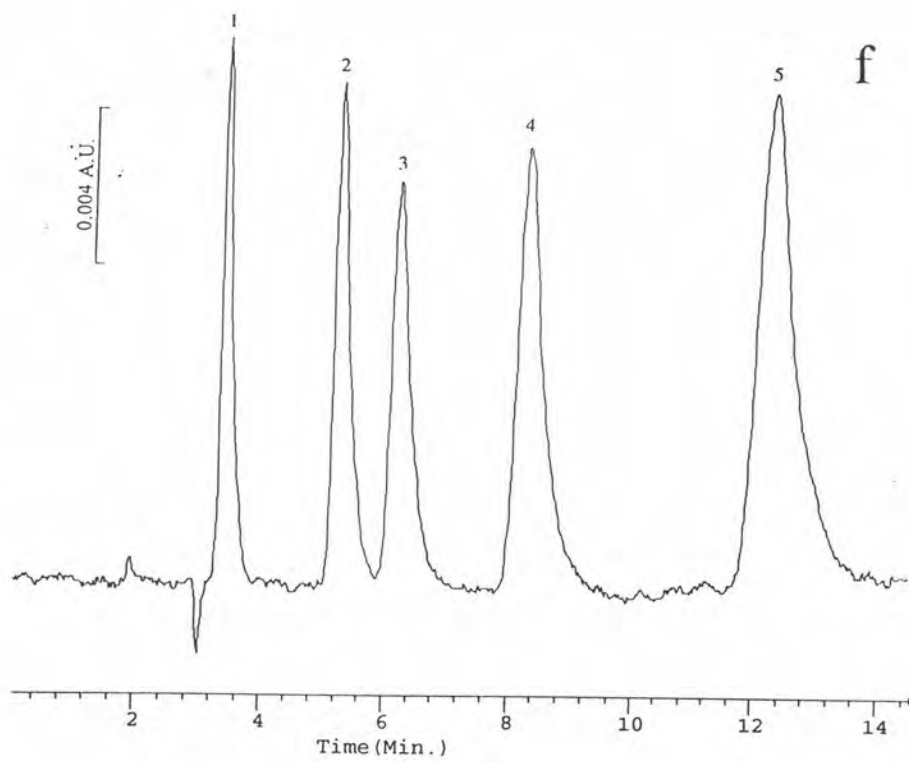


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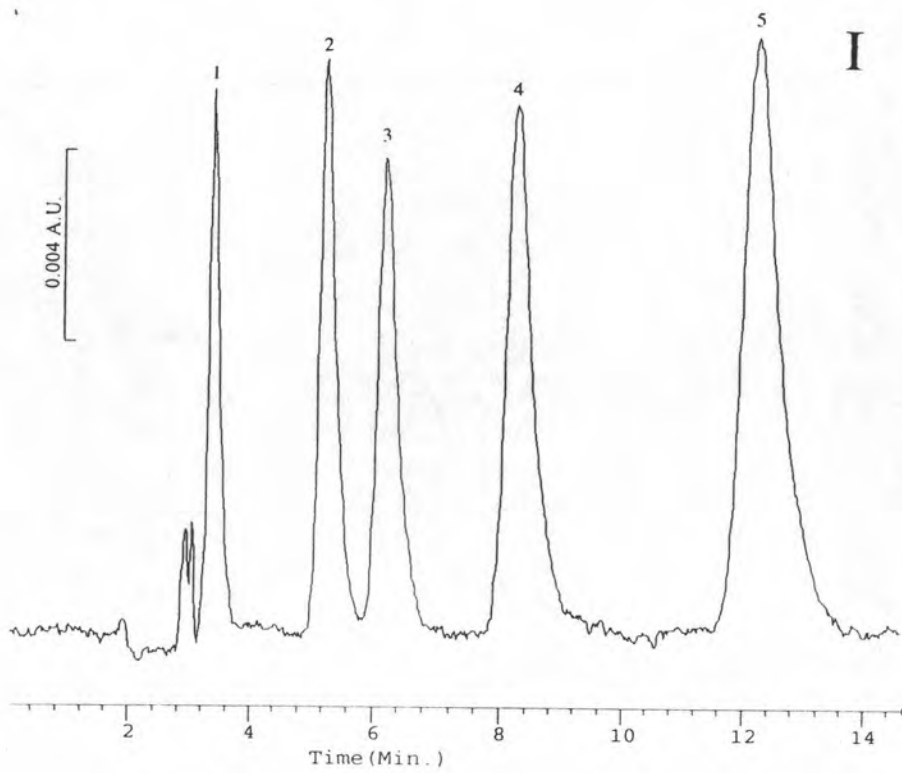
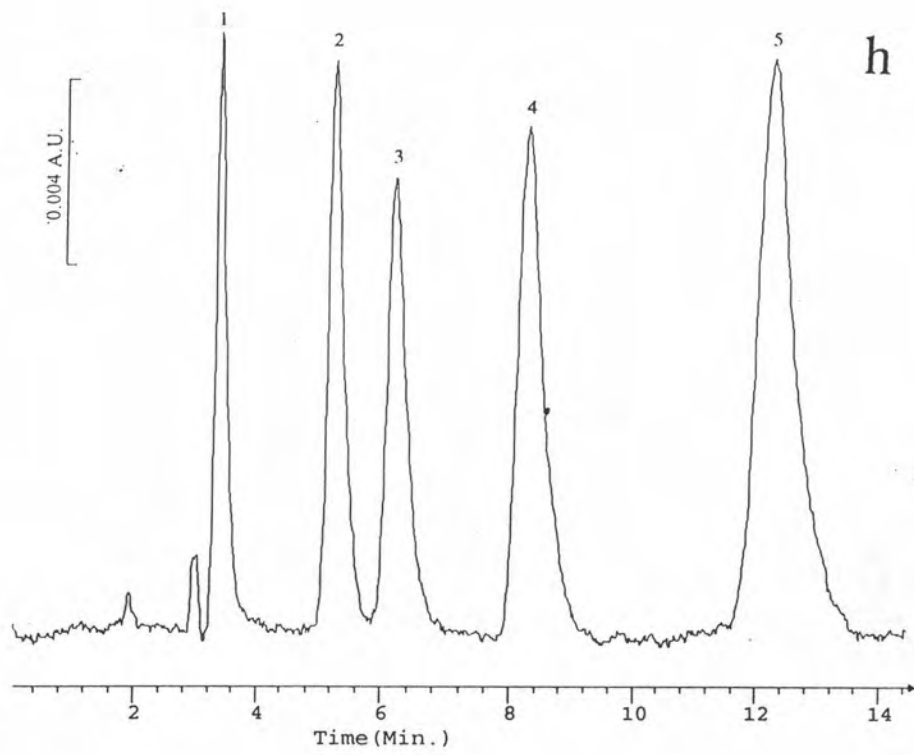


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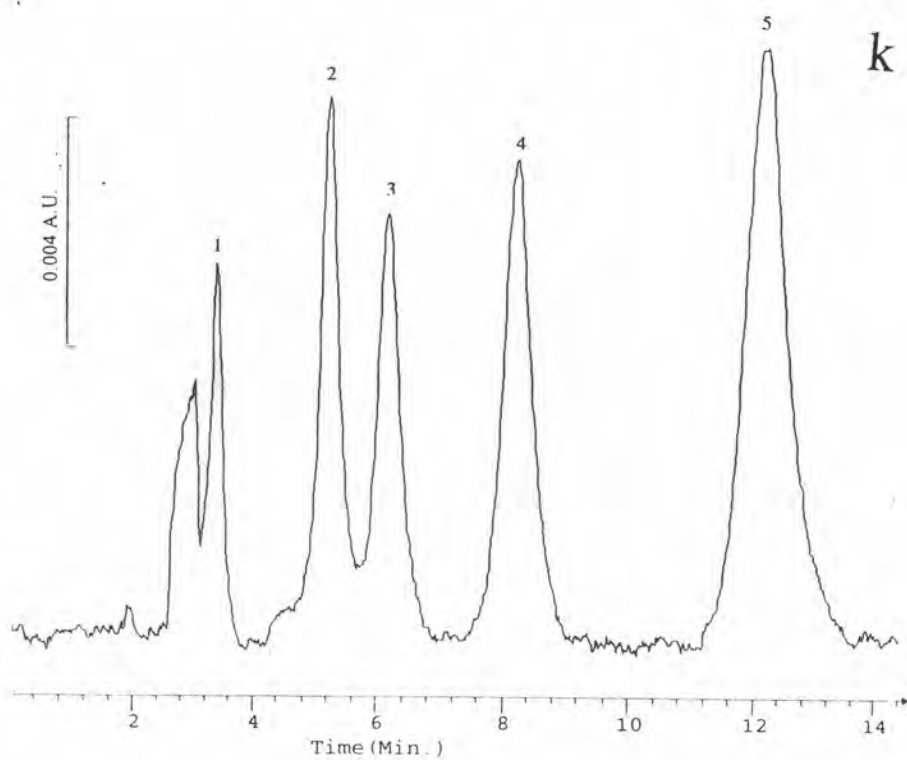
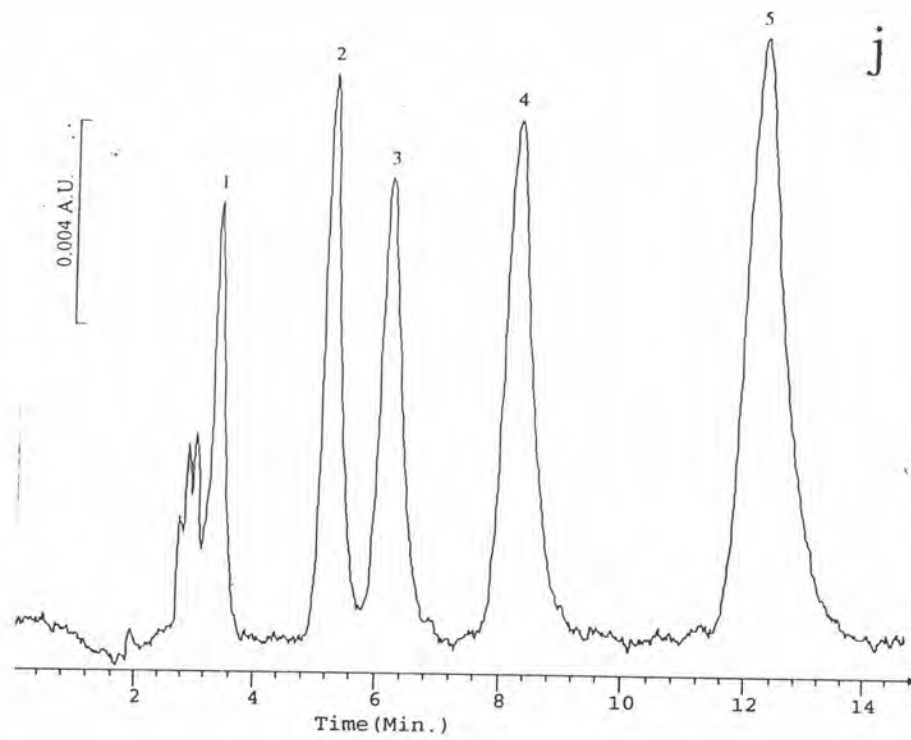


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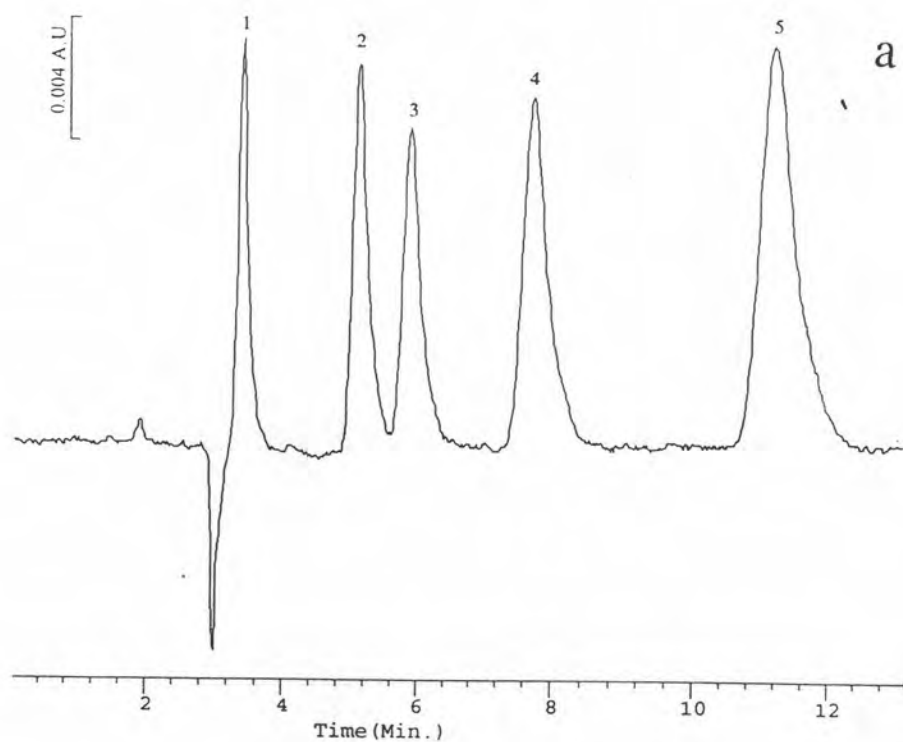


Figure A2 Chromatograms of standard mixtures of phenols dissolved in 2% methanol (a) , 10% methanol (b) , 20% methanol (c) , 30% methanol (d) , 40% methanol (e) , 50% methanol (f) , 60% methanol (g) , 70% methanol (h) , 80% methanol (i) , 90% methanol (j) and pure methanol (k) on reversed phase column. Peak identification and Chromatographic conditions as given in Figure 4.10

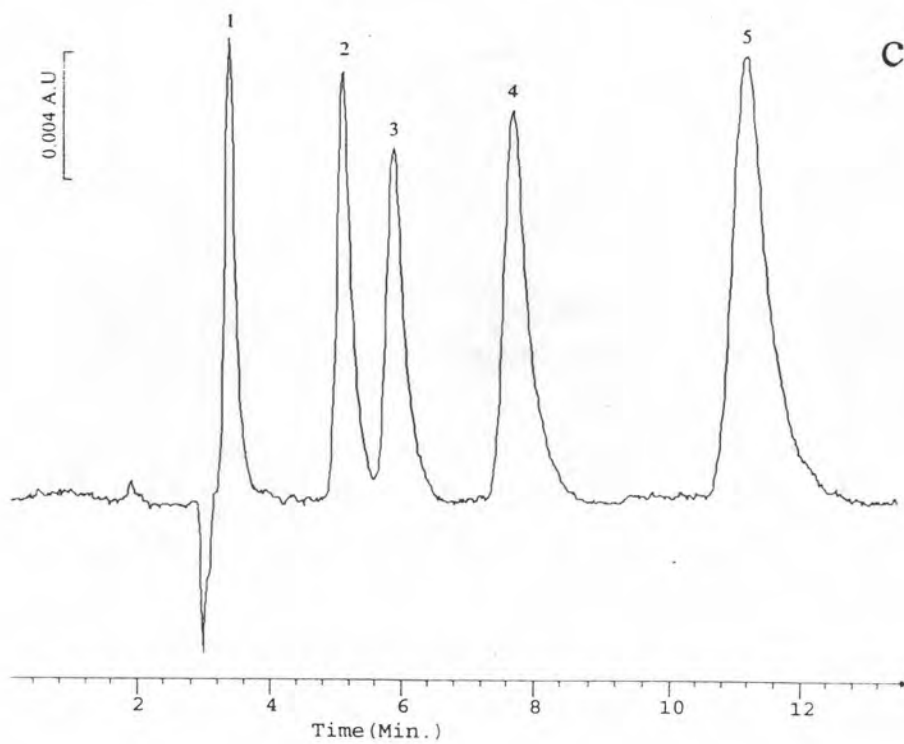
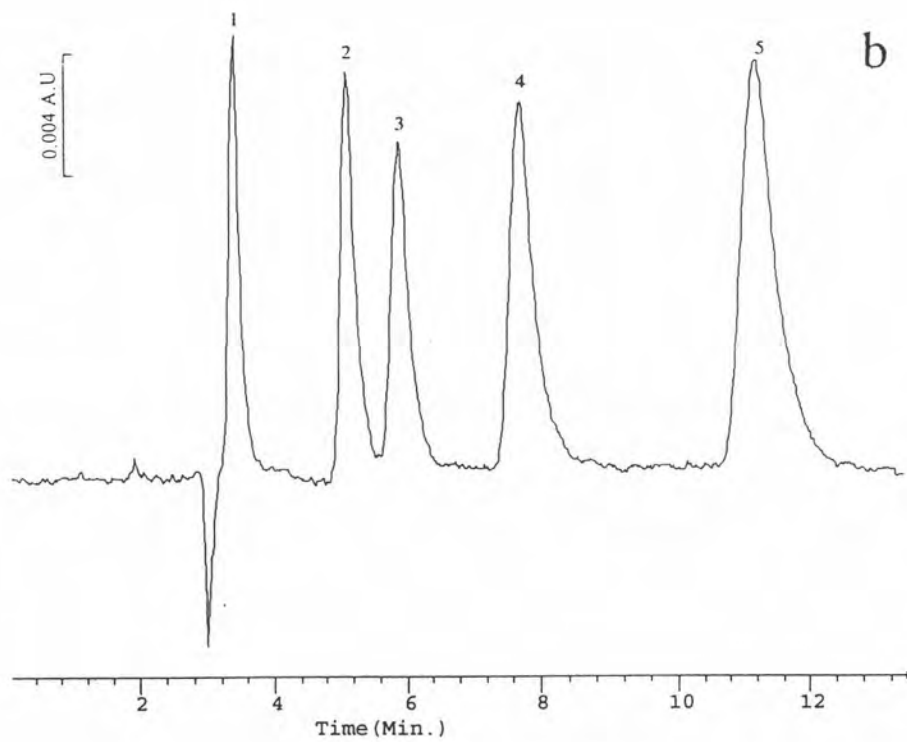


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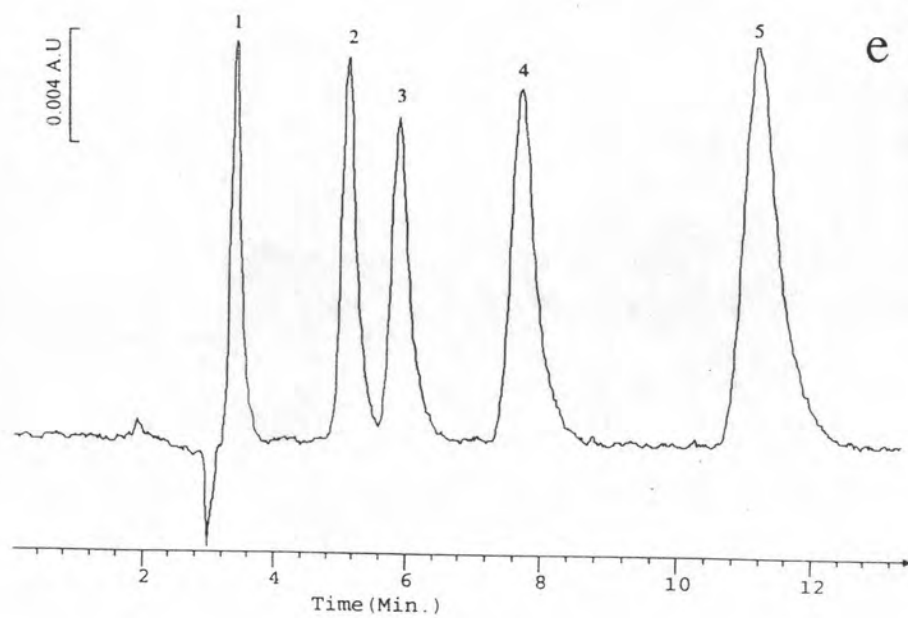
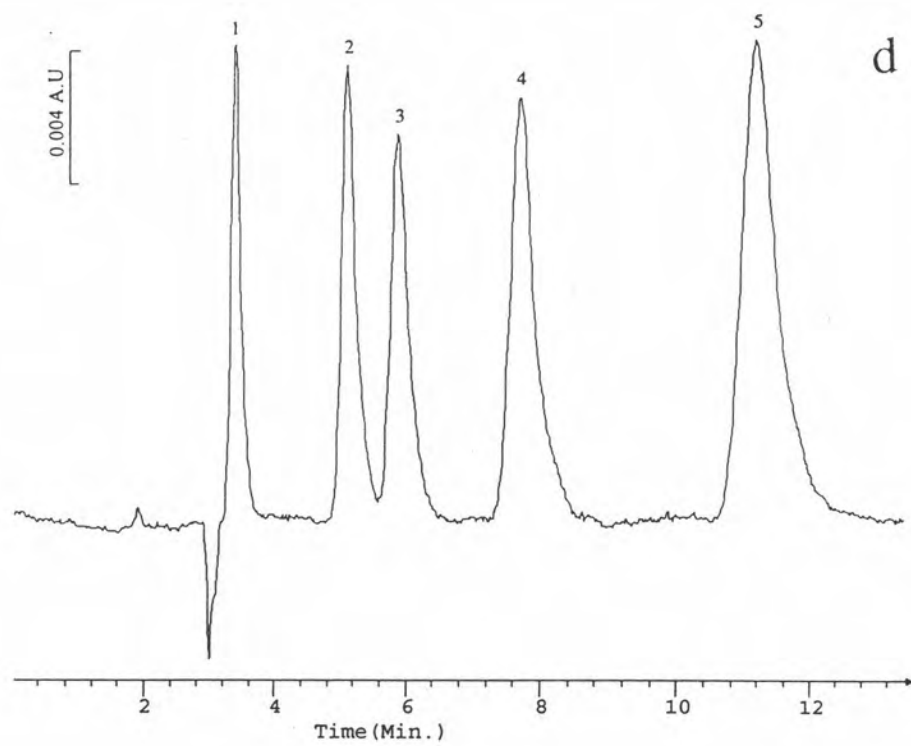


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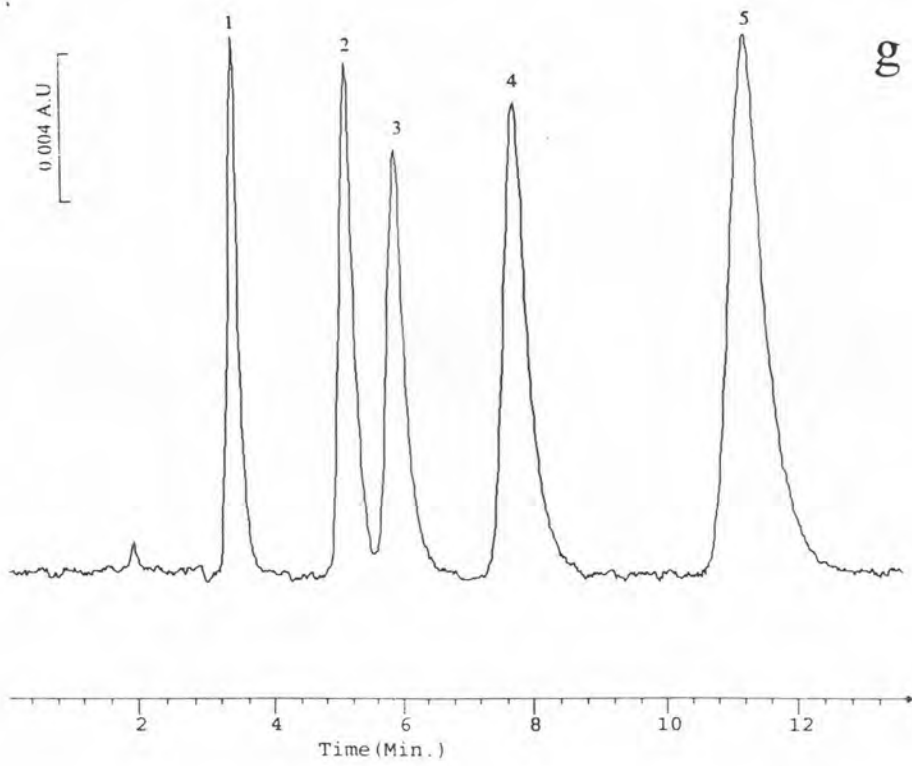
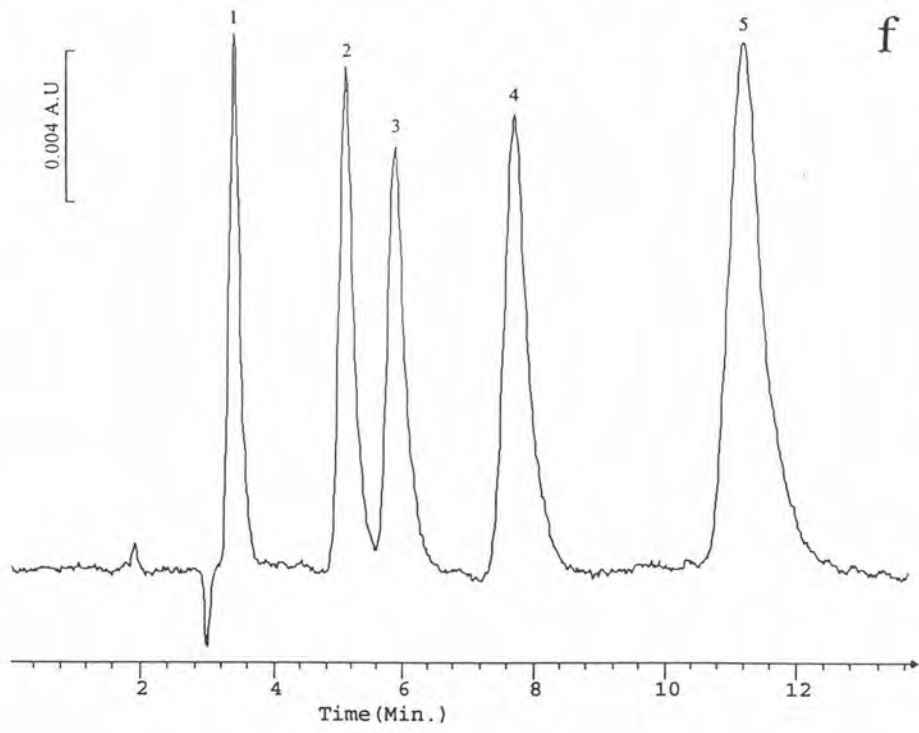


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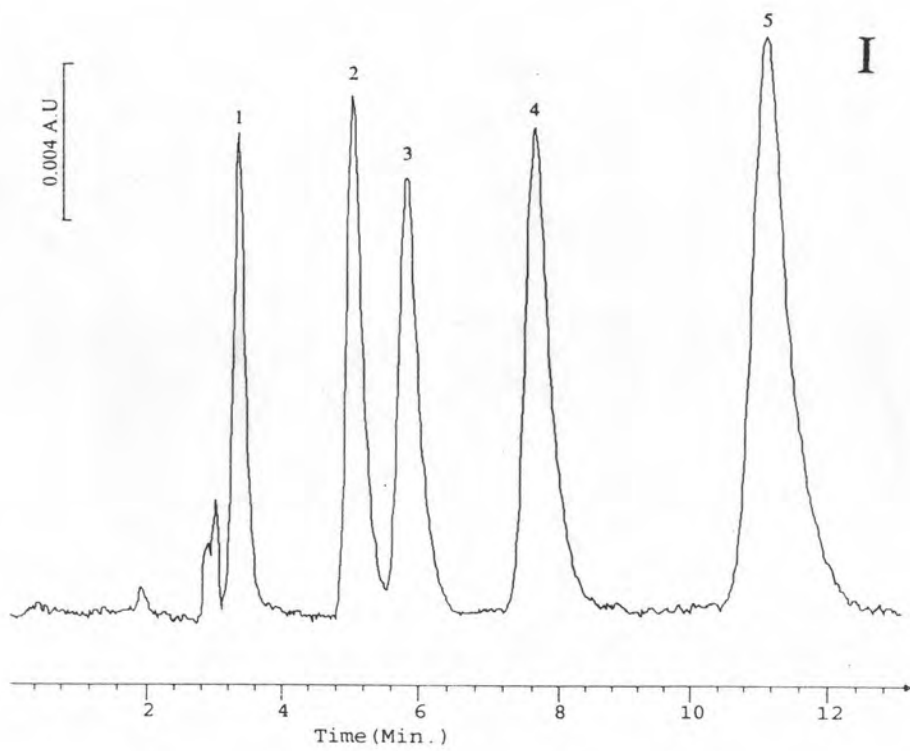
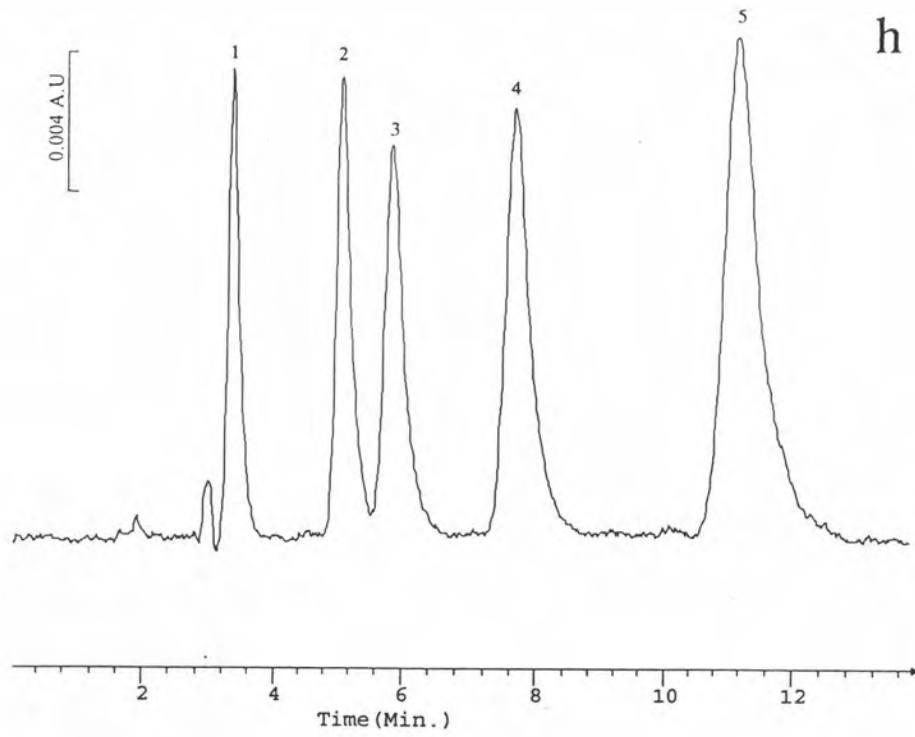


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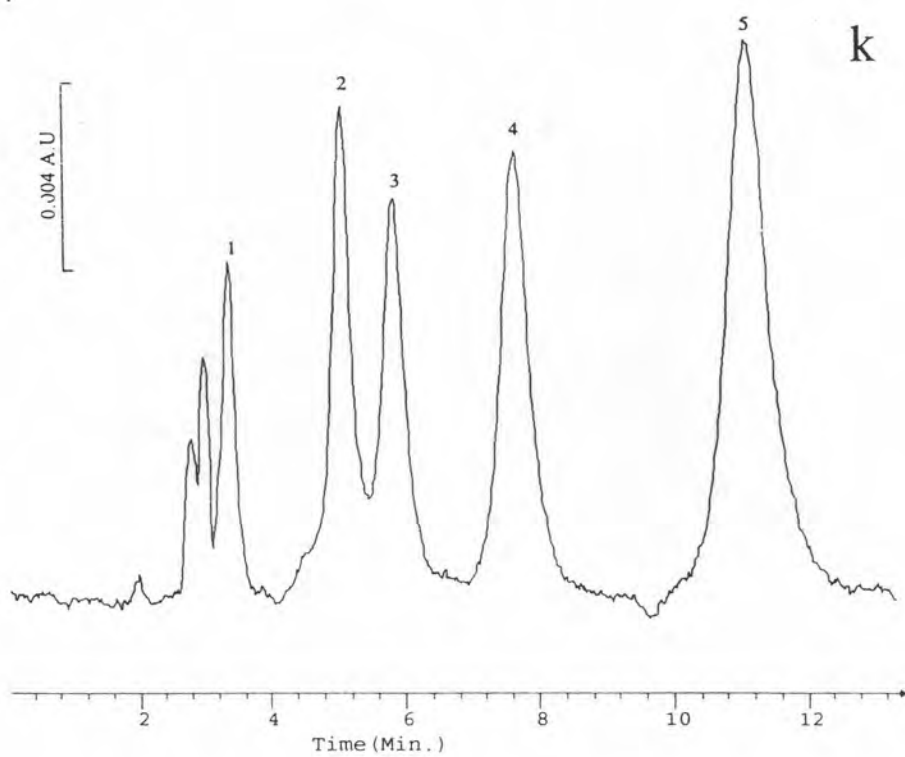
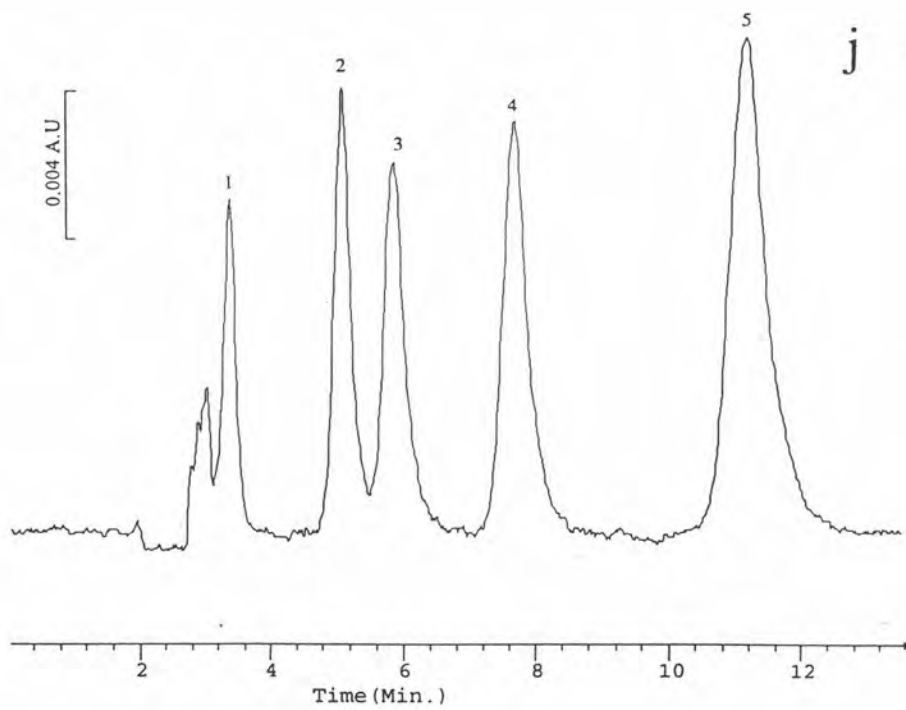


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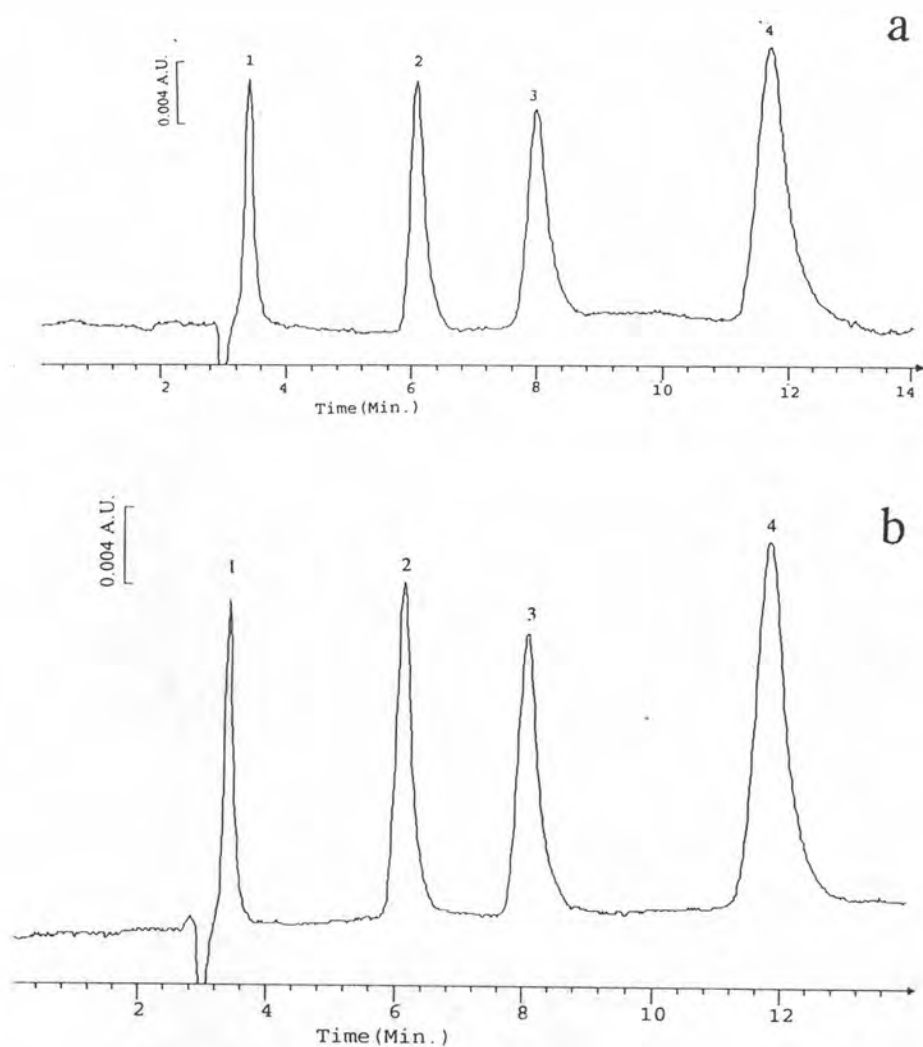


Figure A3 Chromatograms of standard mixtures of phenols dissolved in 2% methanol (a) , 10% methanol (b) , 20% methanol (c) , 30% methanol (d) , 40% methanol (e) , 50% methanol (f) , 60% methanol (g) , 70% methanol (h) , 80% methanol (i) , 90% methanol (j) and pure methanol (k) on reversed phase column. Peak identification and Chromatographic conditions as given in Figure 4.11

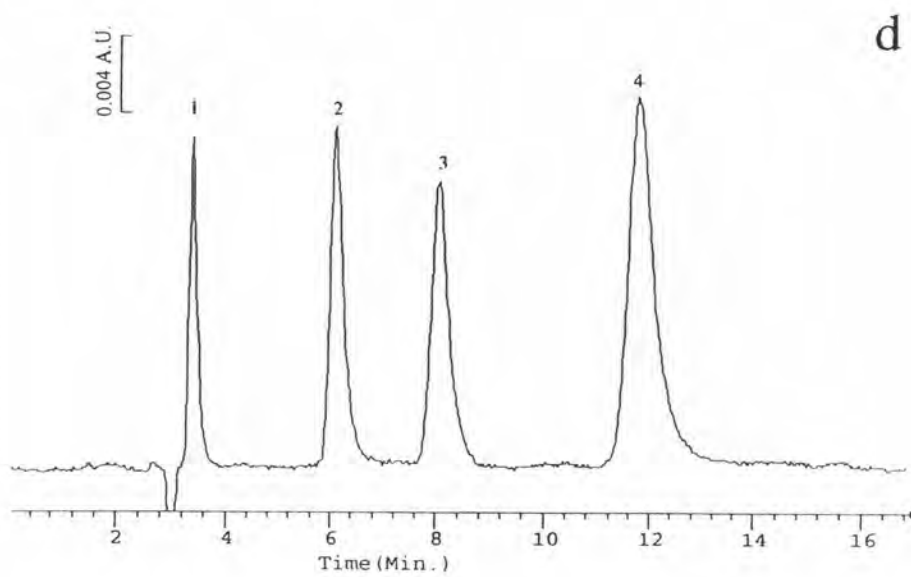
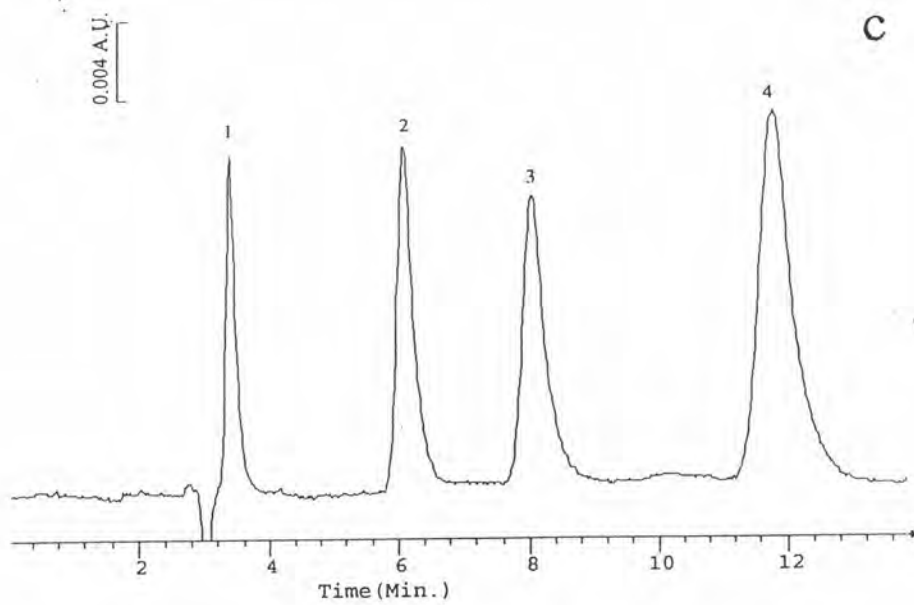


Figure A3. (continued)

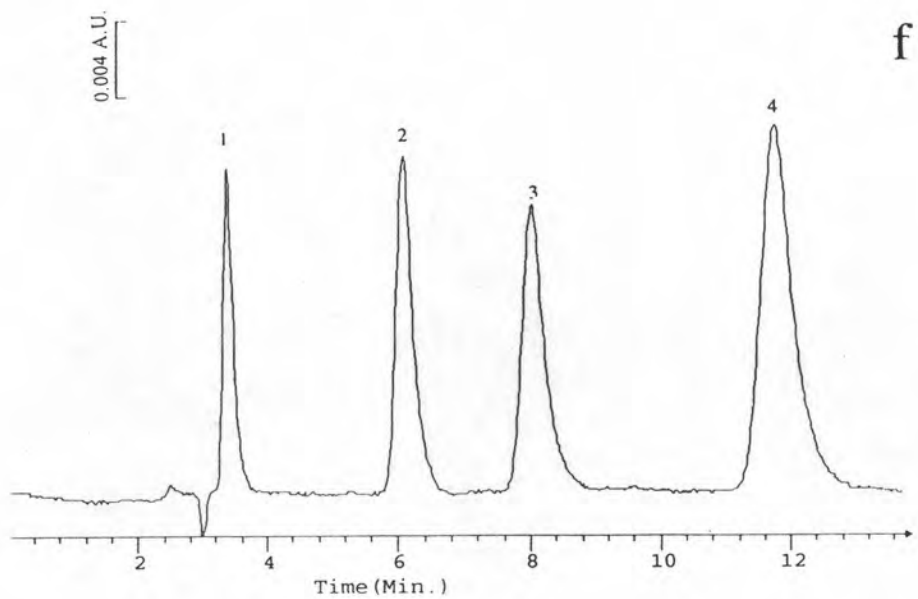
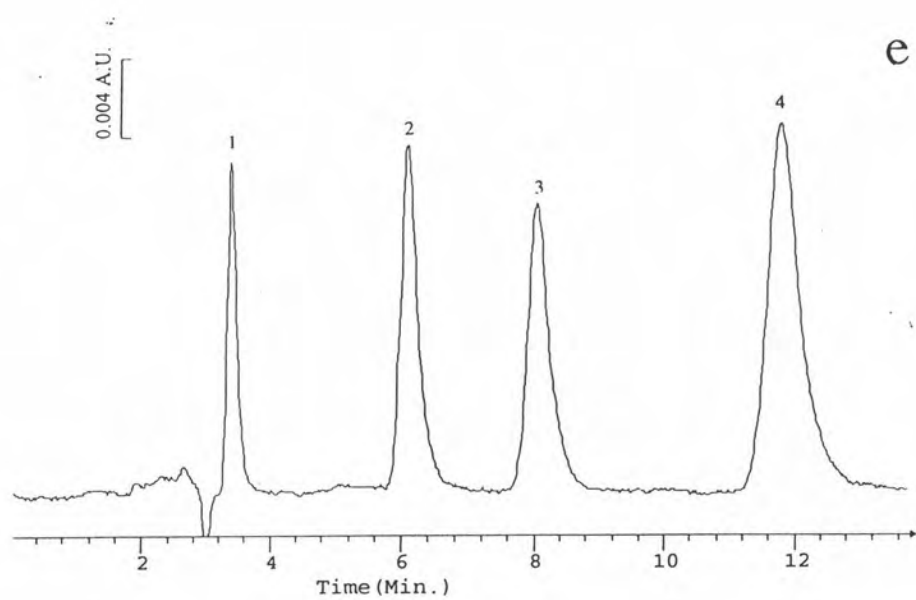


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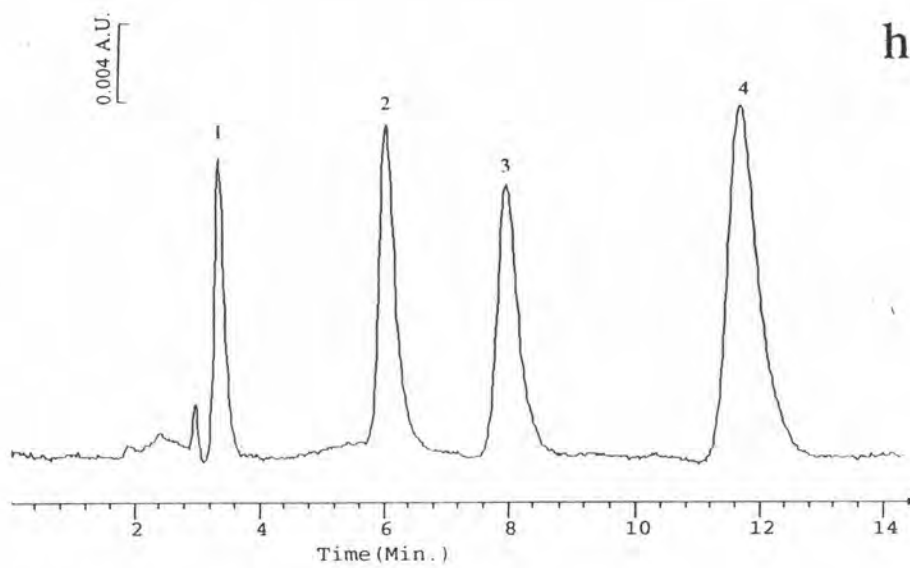
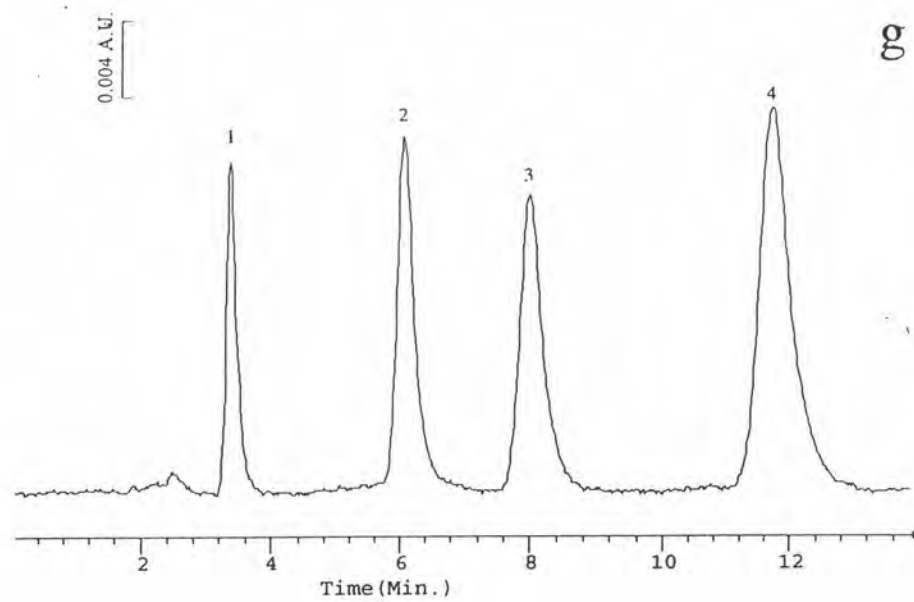


Figure A3. (continued)

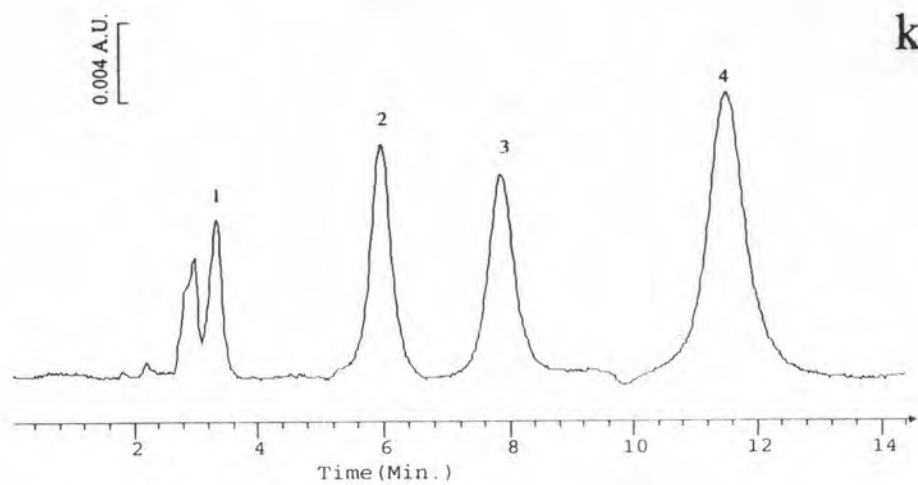
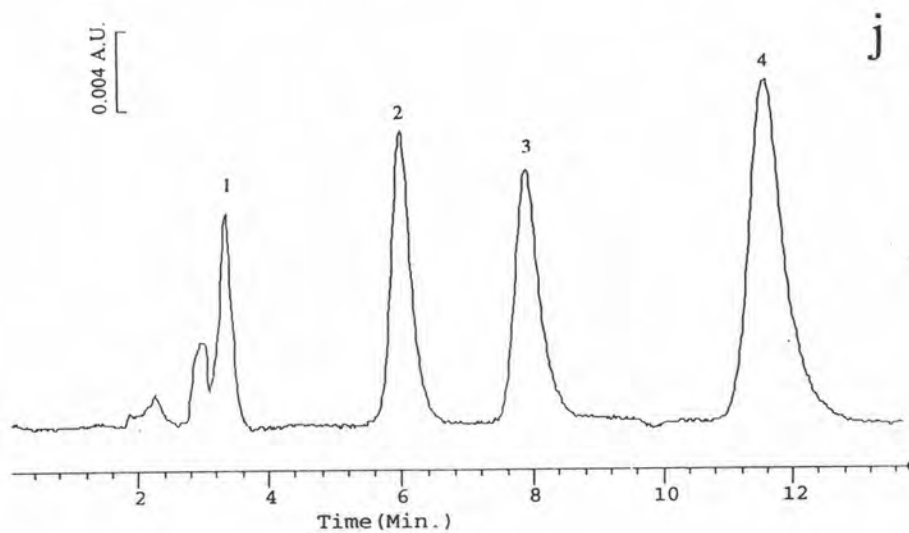
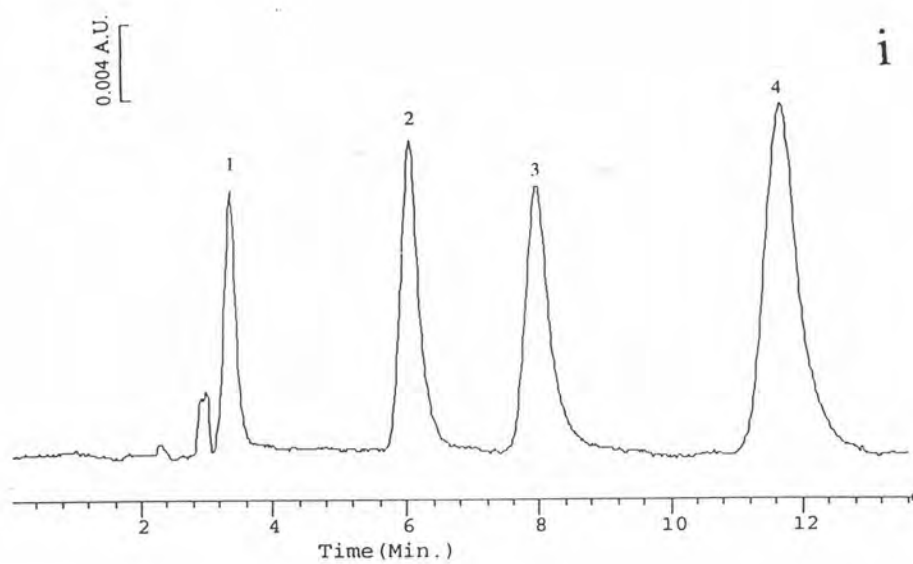


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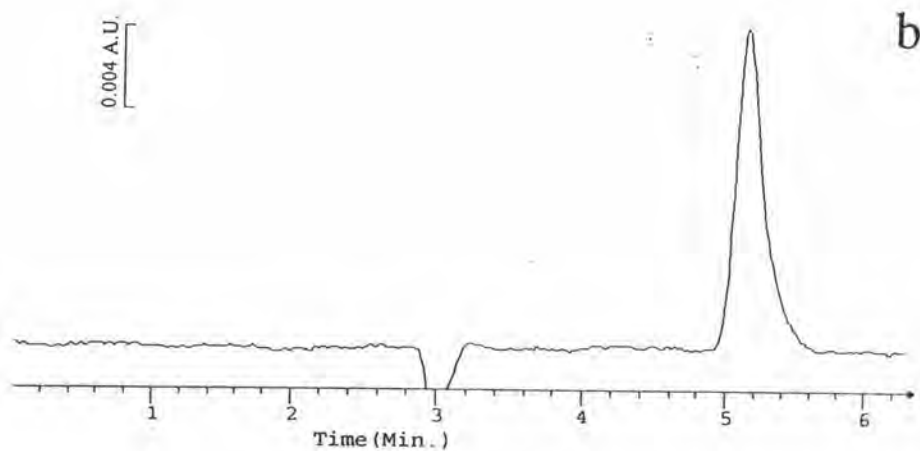
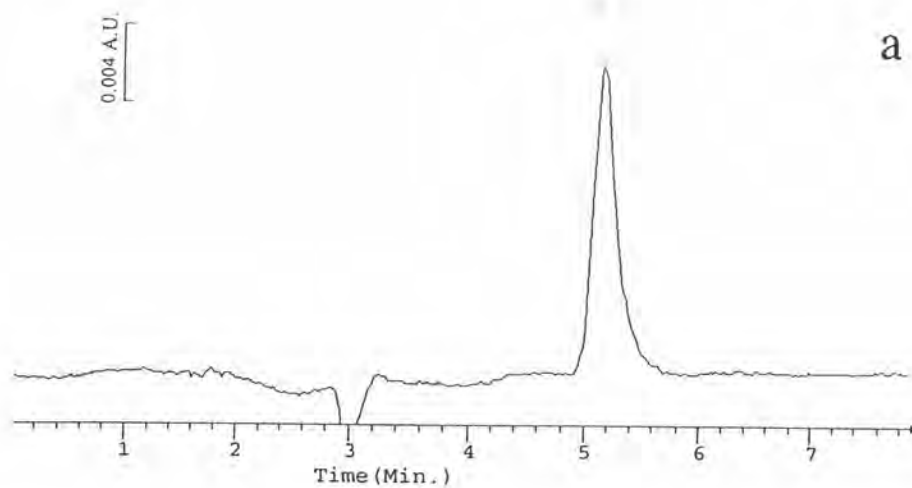


Figure A4 Chromatograms phenol dissolved in 2% methanol (a) , 10% methanol (b) , 20% methanol (c) , 30% methanol (d) , 40% methanol (e) , 50% methanol (f) , 60% methanol (g) , 70% methanol (h) , 80% methanol (i) , 90% methanol (j) and pure methanol (k) on reversed phase column. Chromatographic conditions as given in Figure 4.12

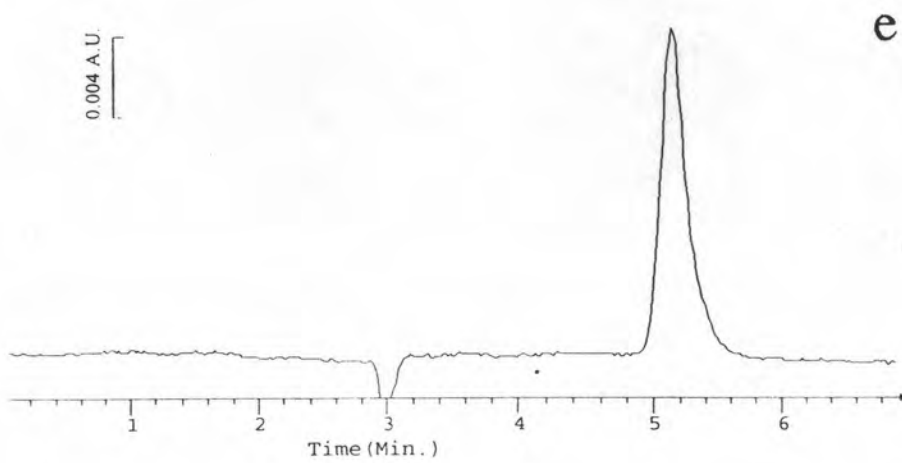
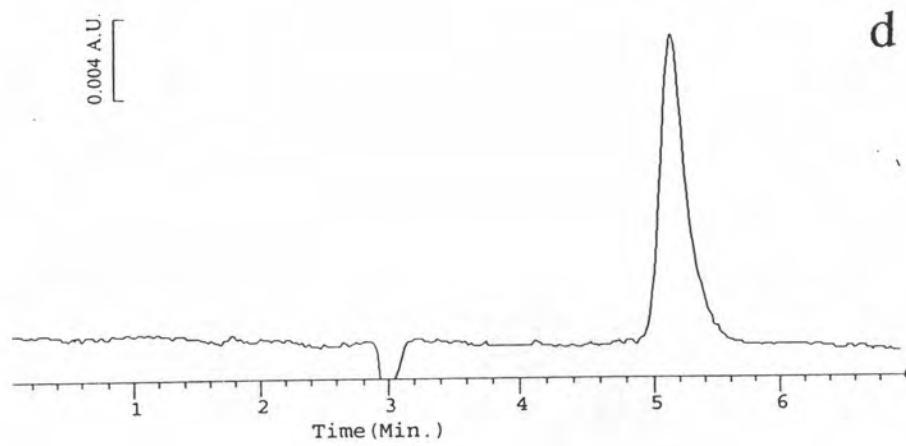
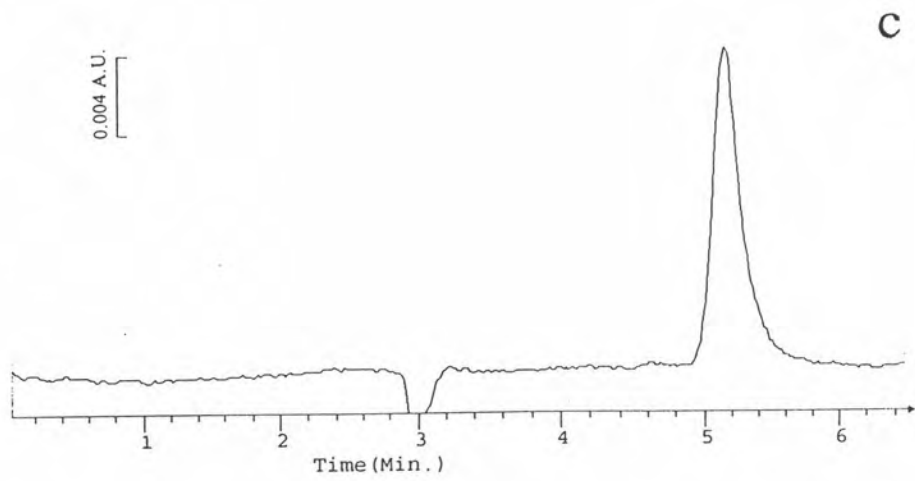


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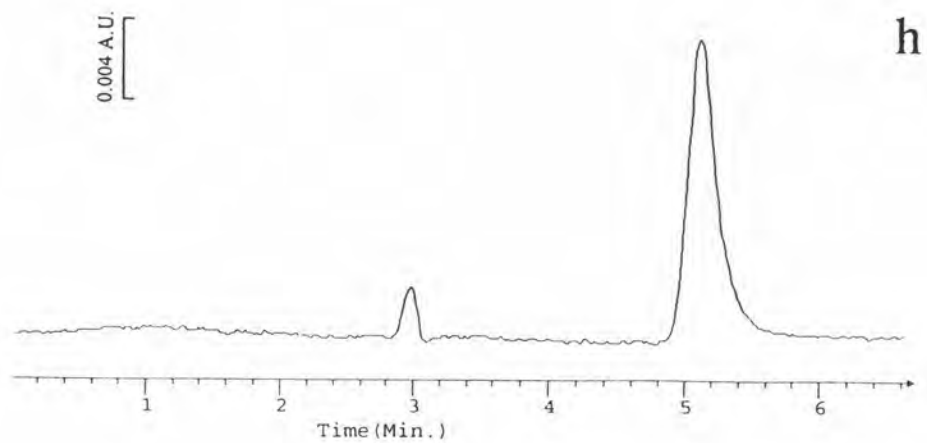
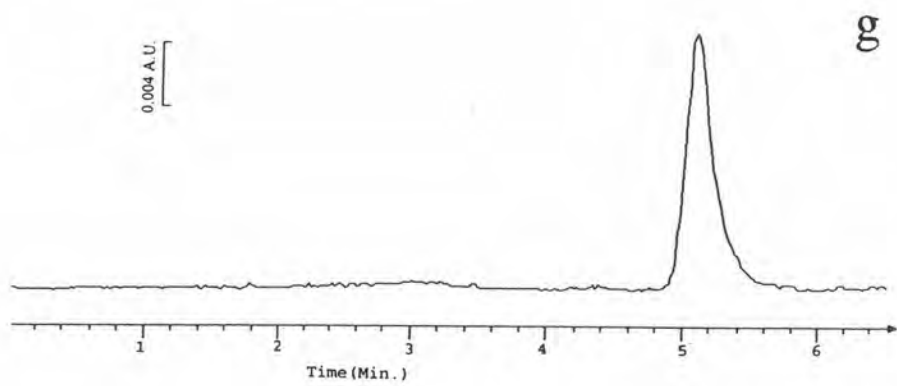
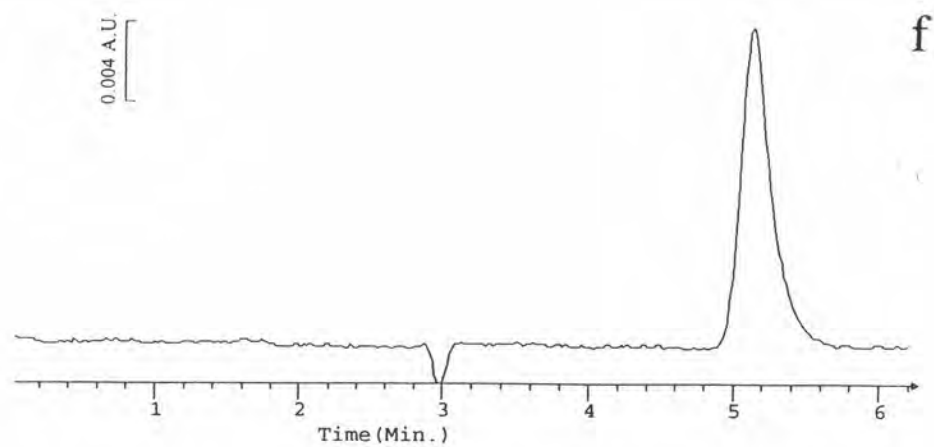


Figure A4. (continued)

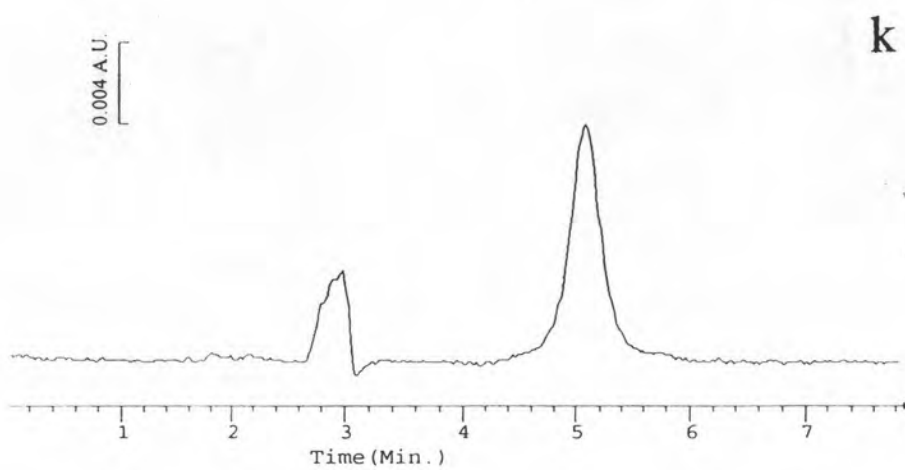
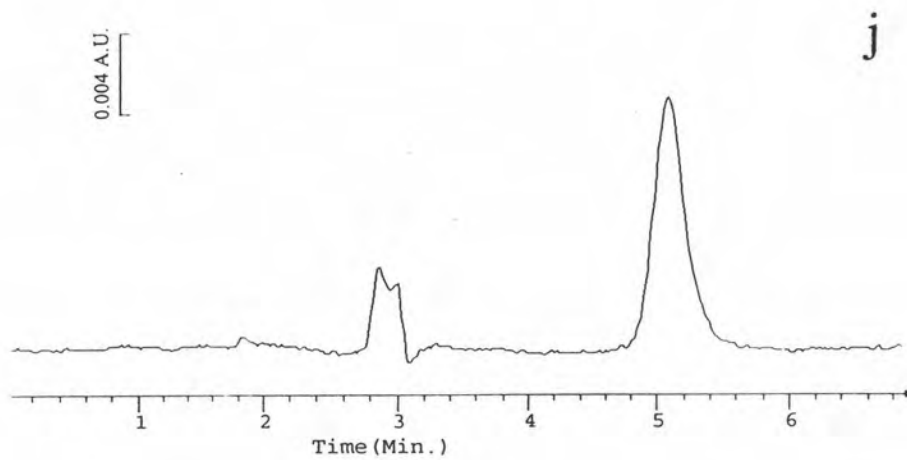
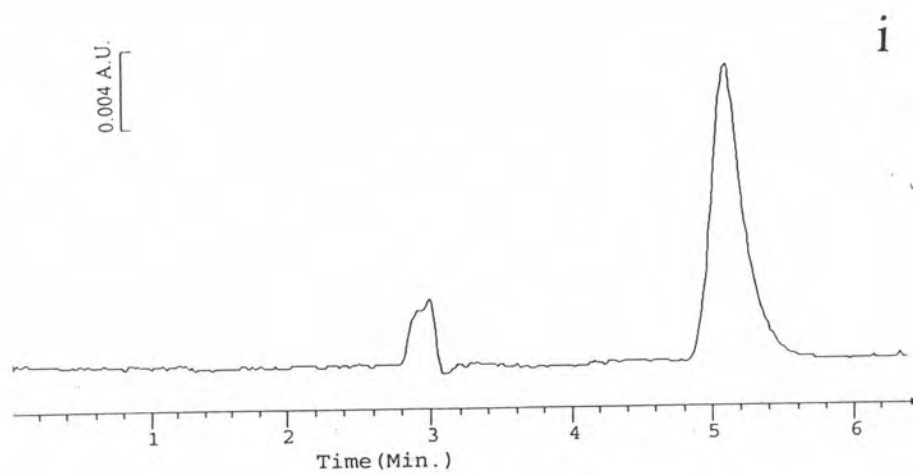


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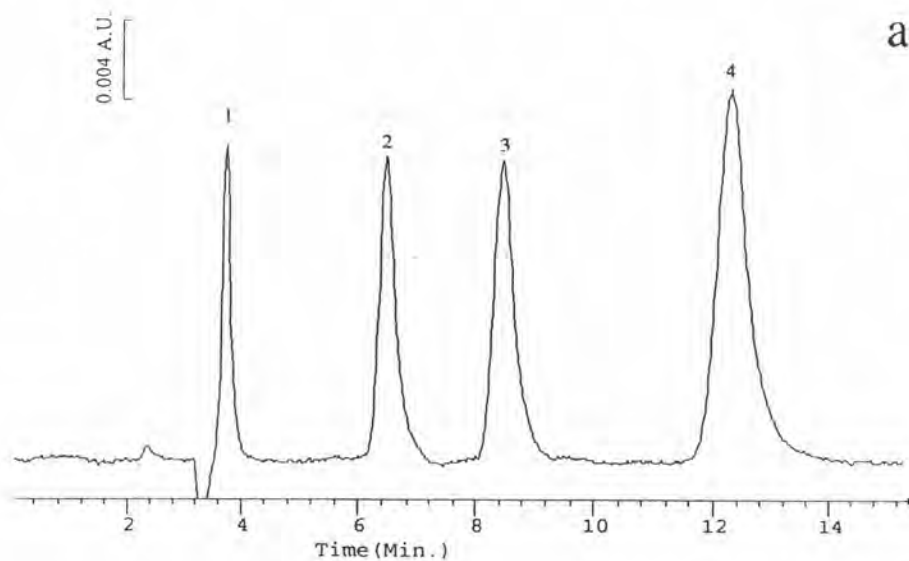


Figure A5 Chromatograms of standard mixtures of phenols dissolved in 2% methanol (a) , 10% methanol (b) , 20% methanol (c) , 30% methanol (d) , 40% methanol (e) , 50% methanol (f) , 60% methanol (g) , 70% methanol (h) , 80% methanol (i) , 90% methanol (j) and pure methanol (k) on reversed phase column. Peak identification and Chromatographic conditions as given in Figure 4.13

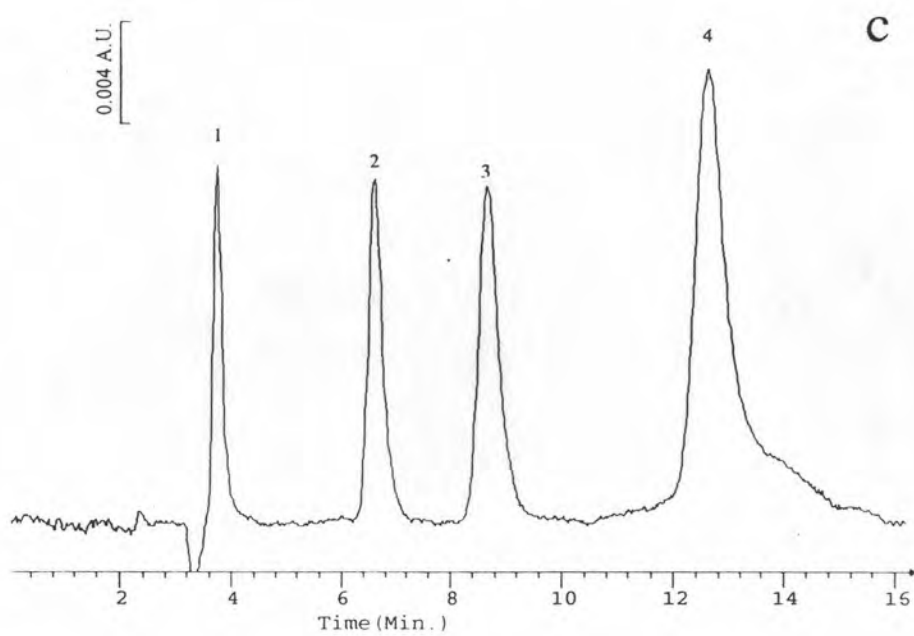
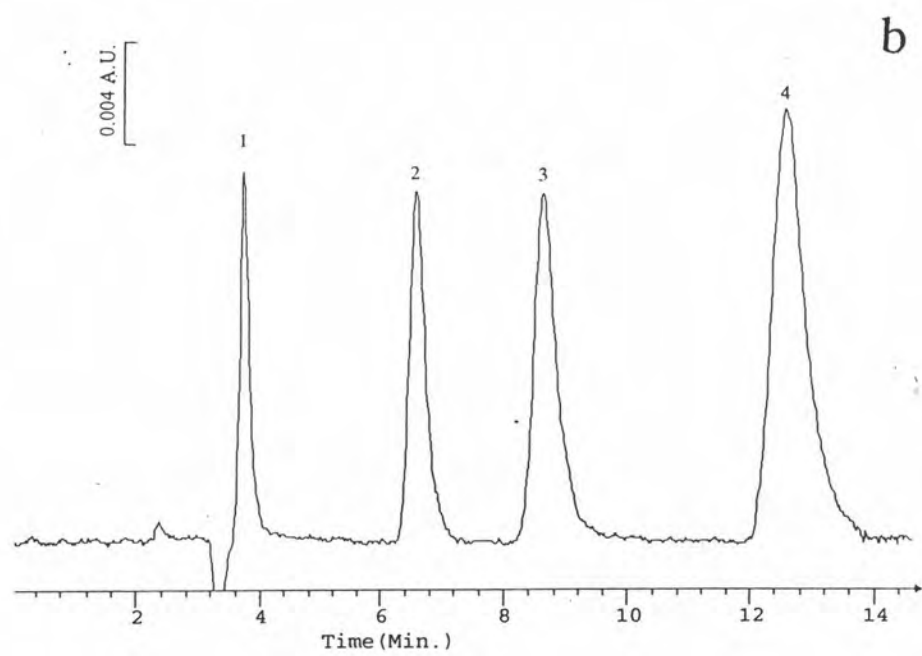


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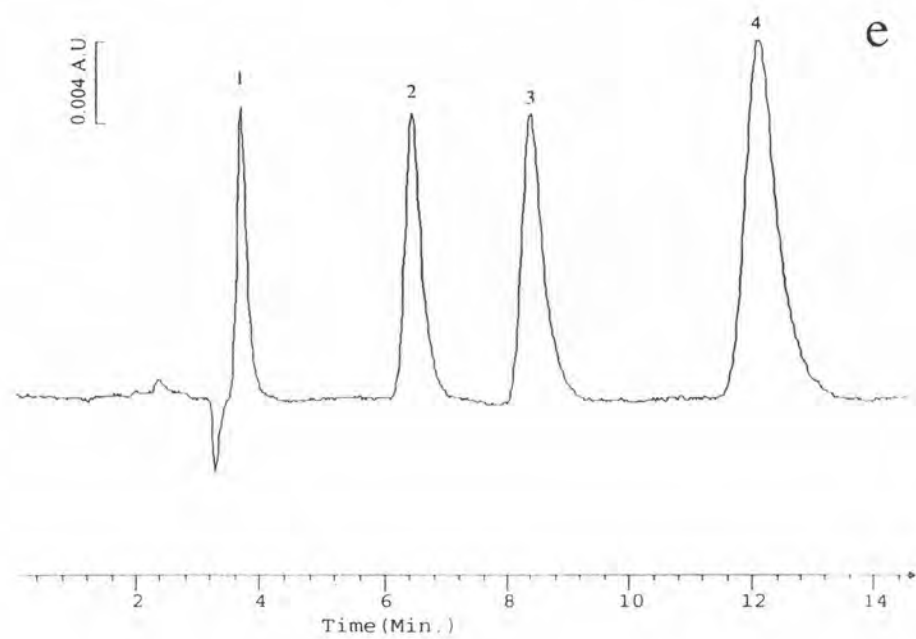
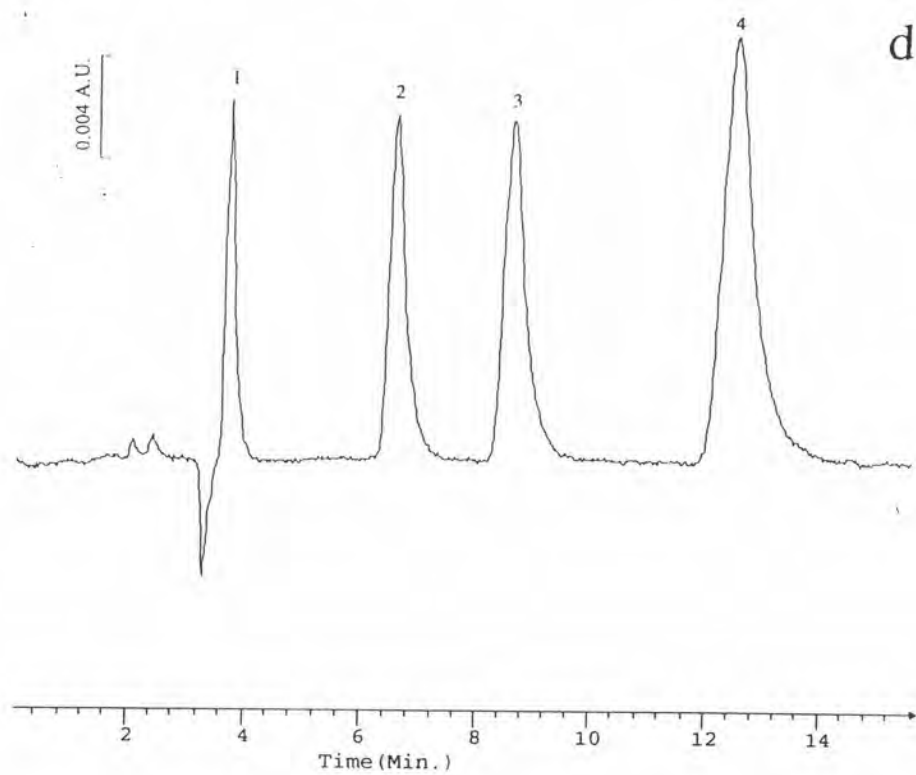


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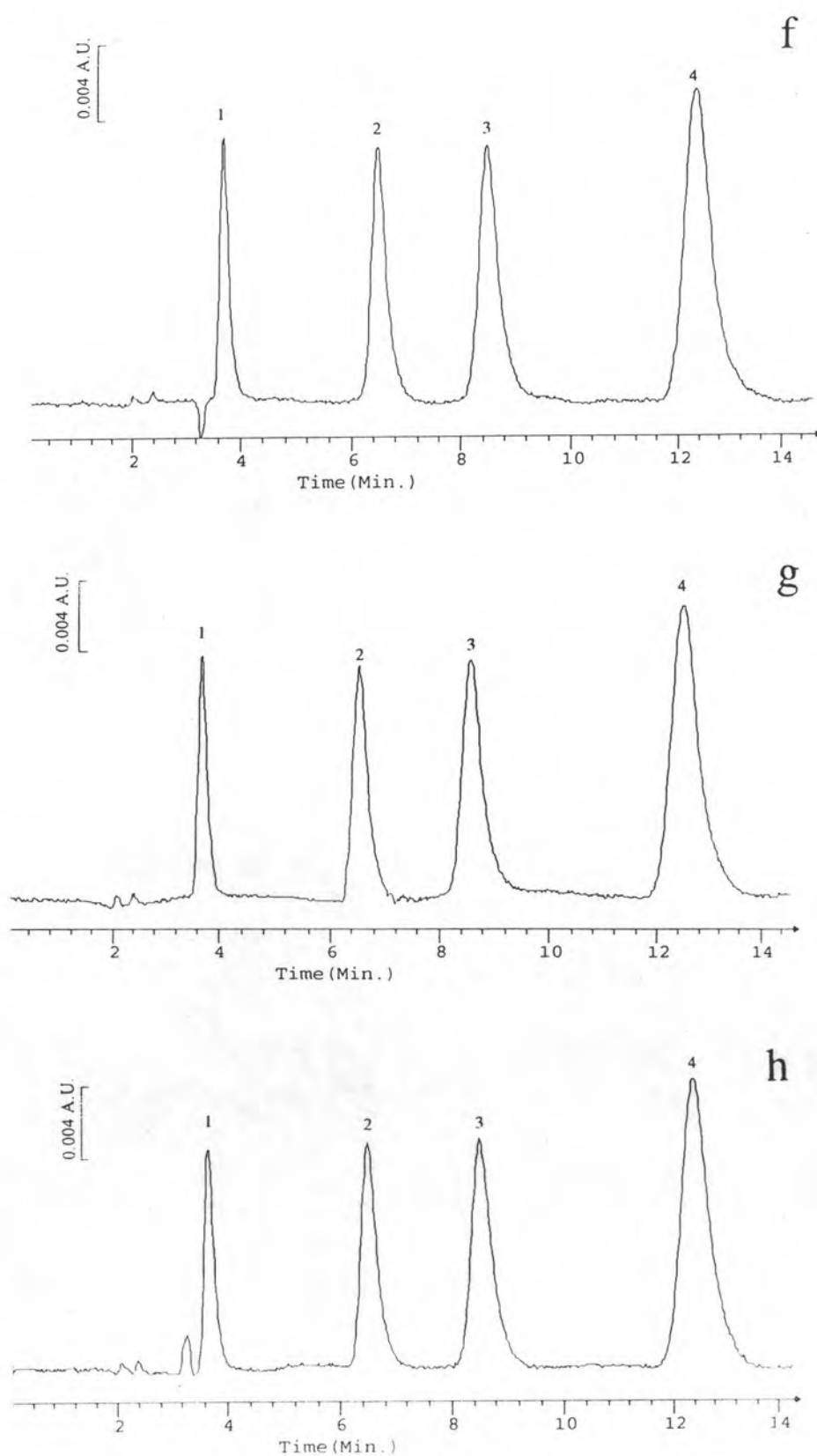


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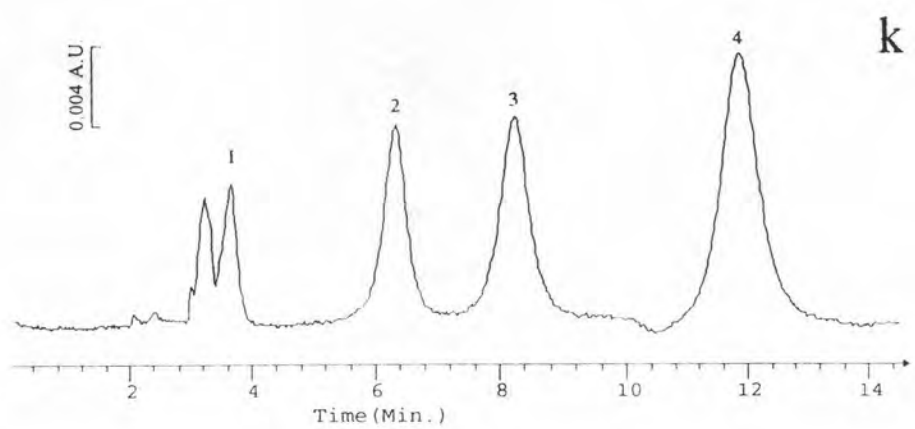
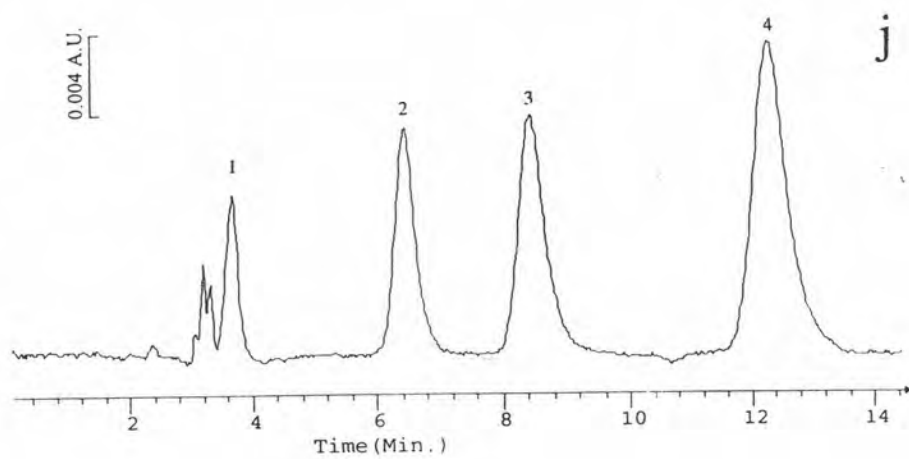
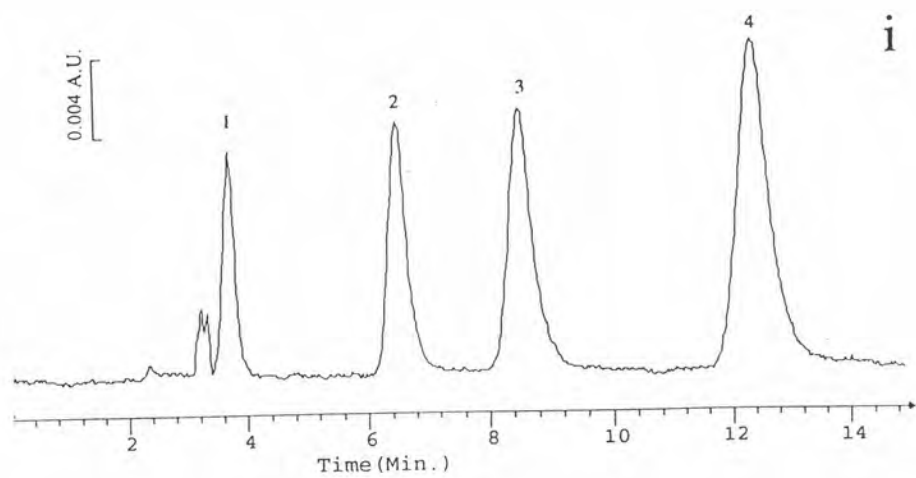


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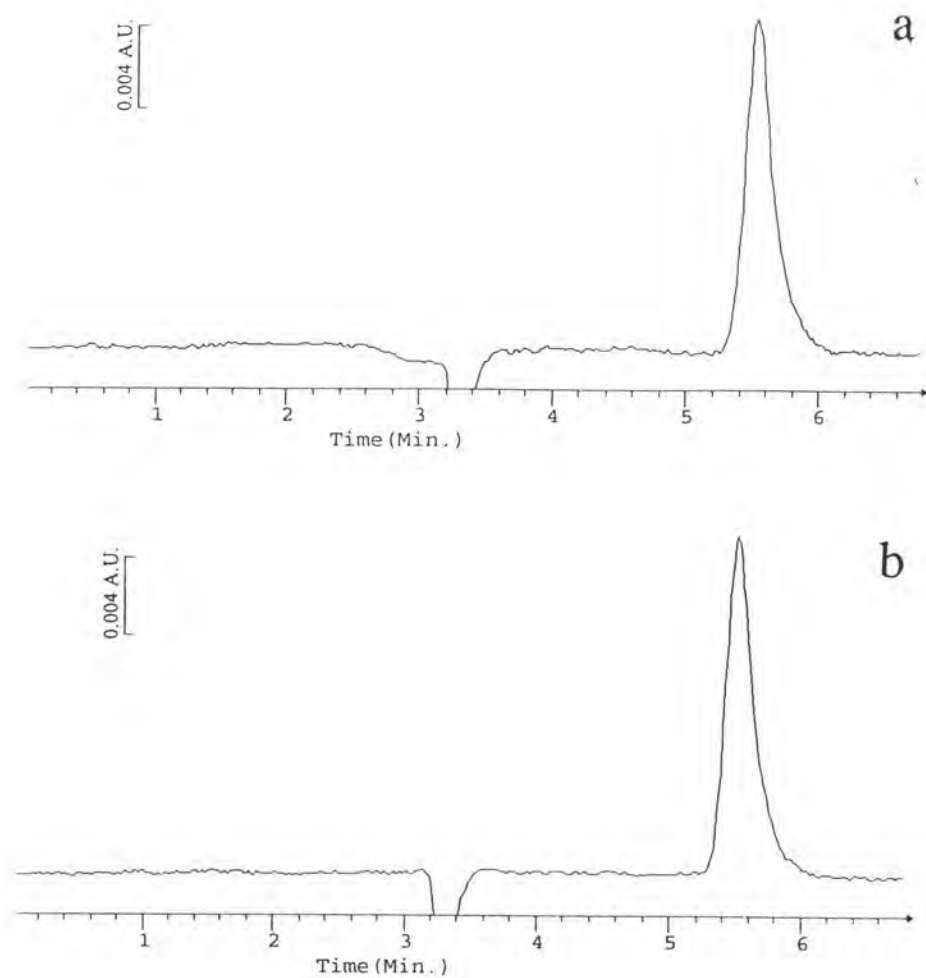


Figure A6 Chromatograms phenol dissolved in 2% methanol (a) , 10% methanol (b) , 20% methanol (c) , 30% methanol (d) , 40% methanol (e) , 50% methanol (f) , 60% methanol (g) , 70% methanol (h) , 80% methanol (i) , 90% methanol (j) and pure methanol (k) on reversed phase column. Chromatographic conditions as given in Figure 4.14

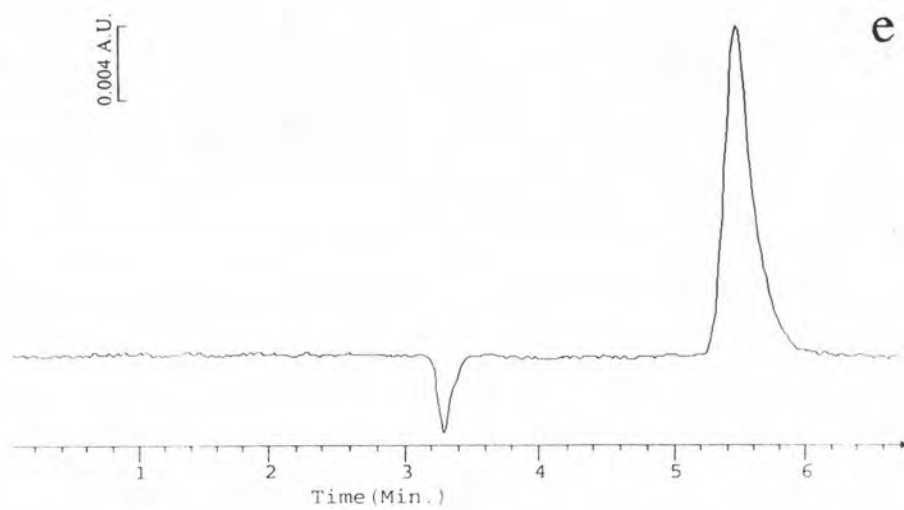
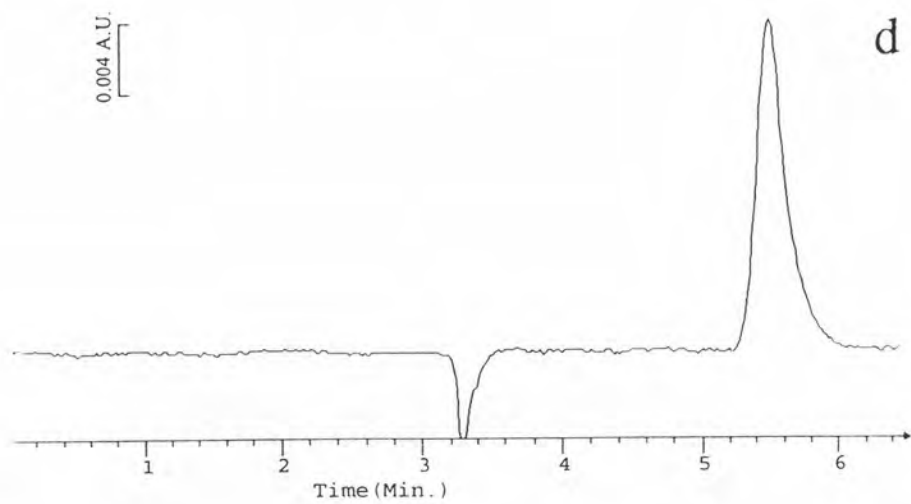
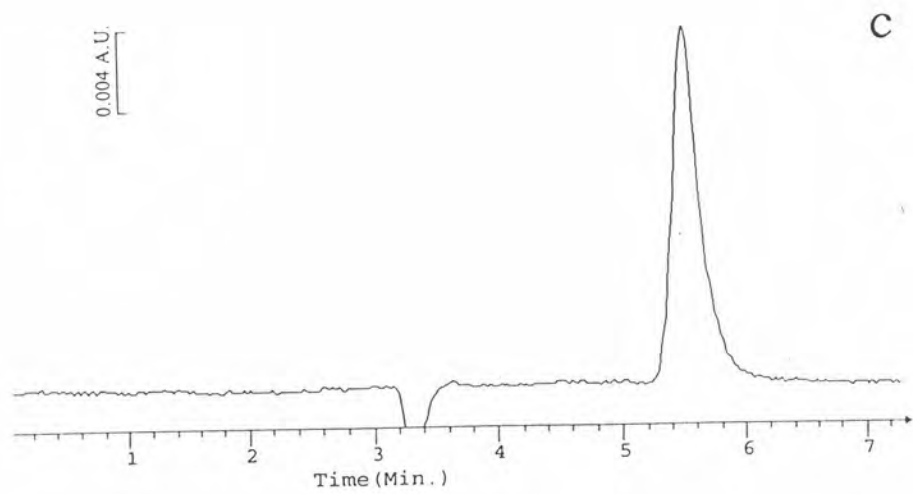


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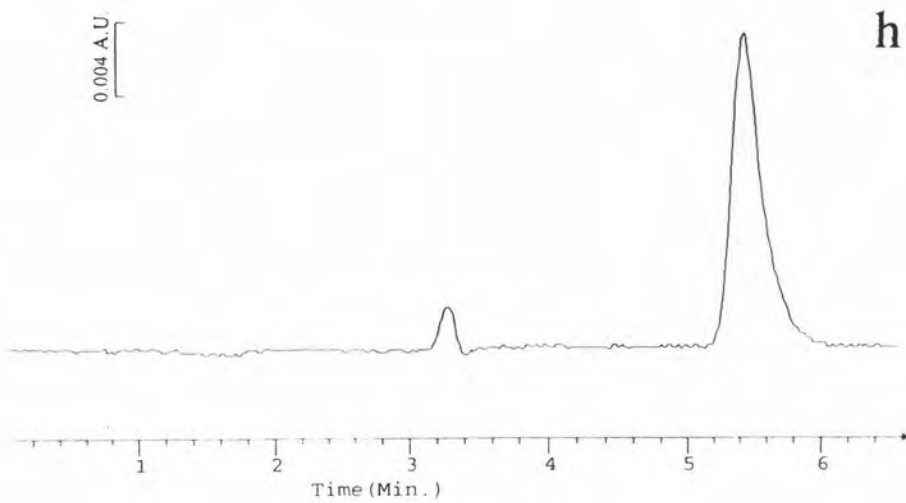
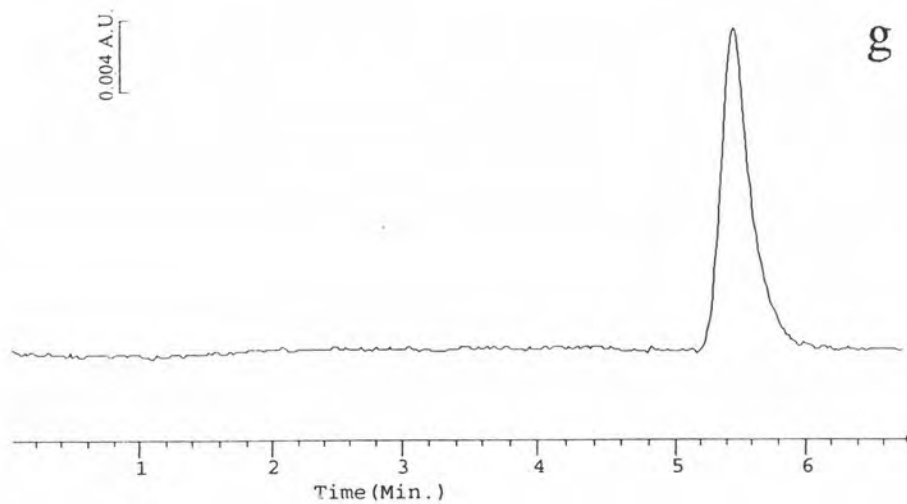
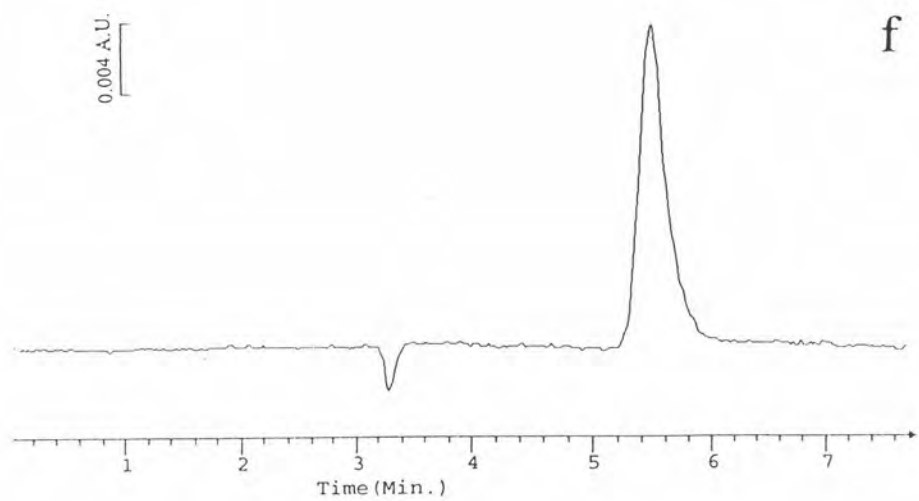


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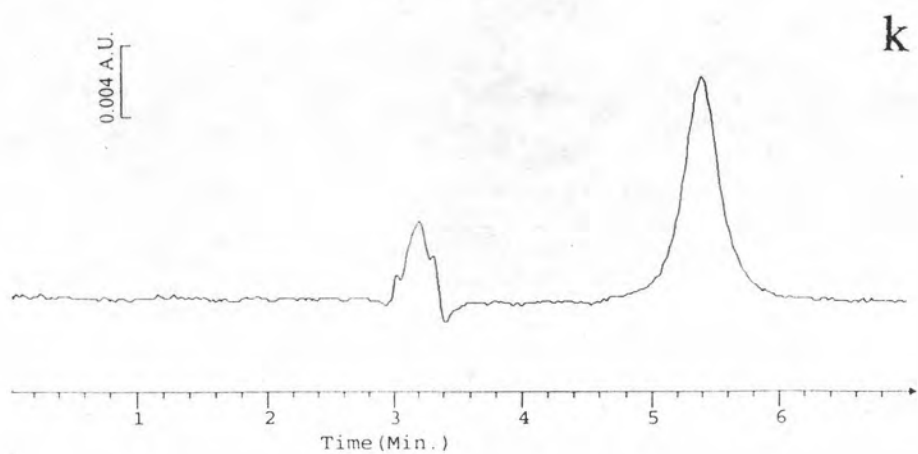
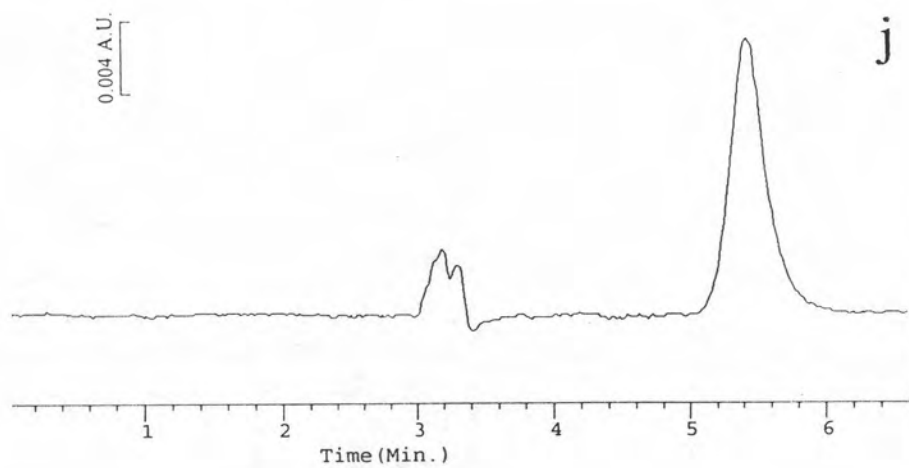
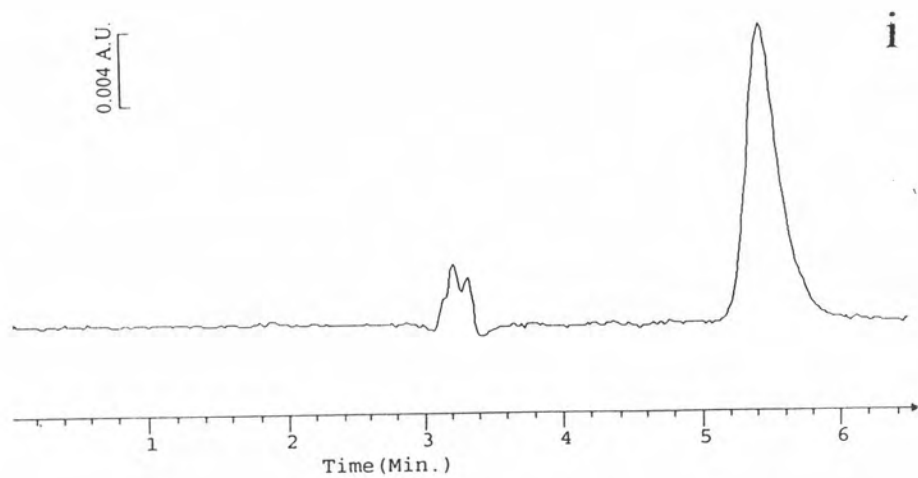


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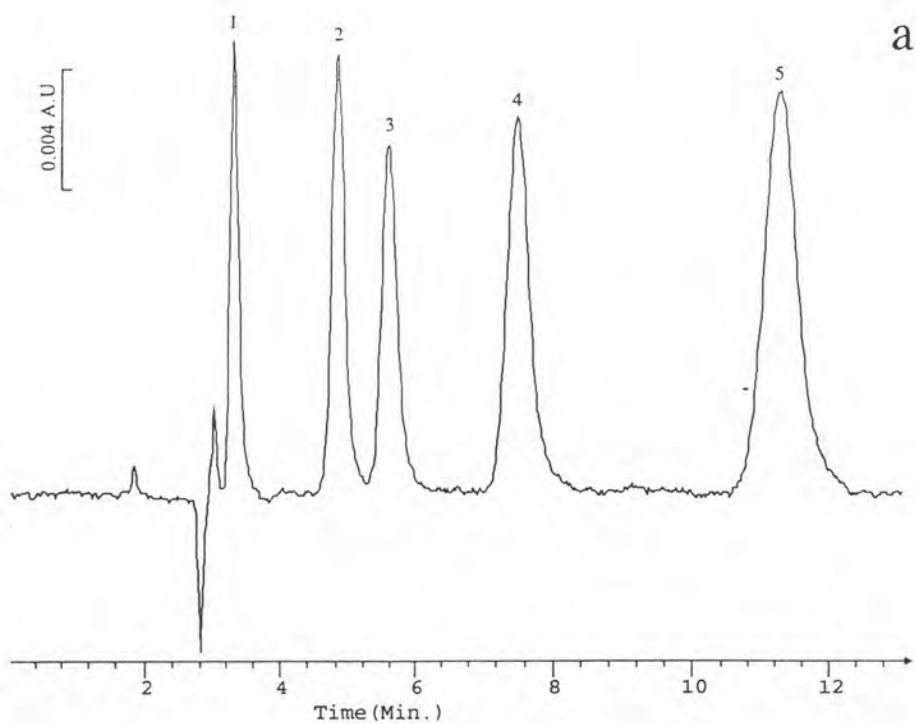


Figure A7 Chromatograms of standard mixtures of phenols dissolved in 2% methanol (a) , 10% methanol (b) , 20% methanol (c) , 30% methanol (d) , 40% methanol (e) , 50% methanol (f) , 60% methanol (g) , 70% methanol (h) , 80% methanol (i) , 90% methanol (j) and pure methanol (k) on reversed phase column. Peak identification and Chromatographic conditions as given in Figure 4.15

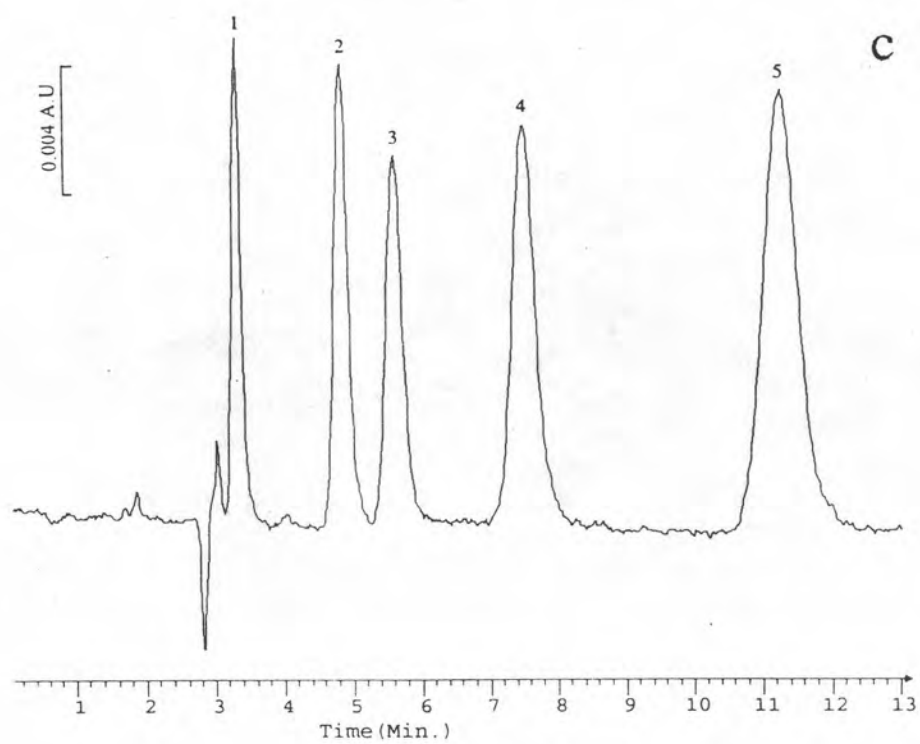
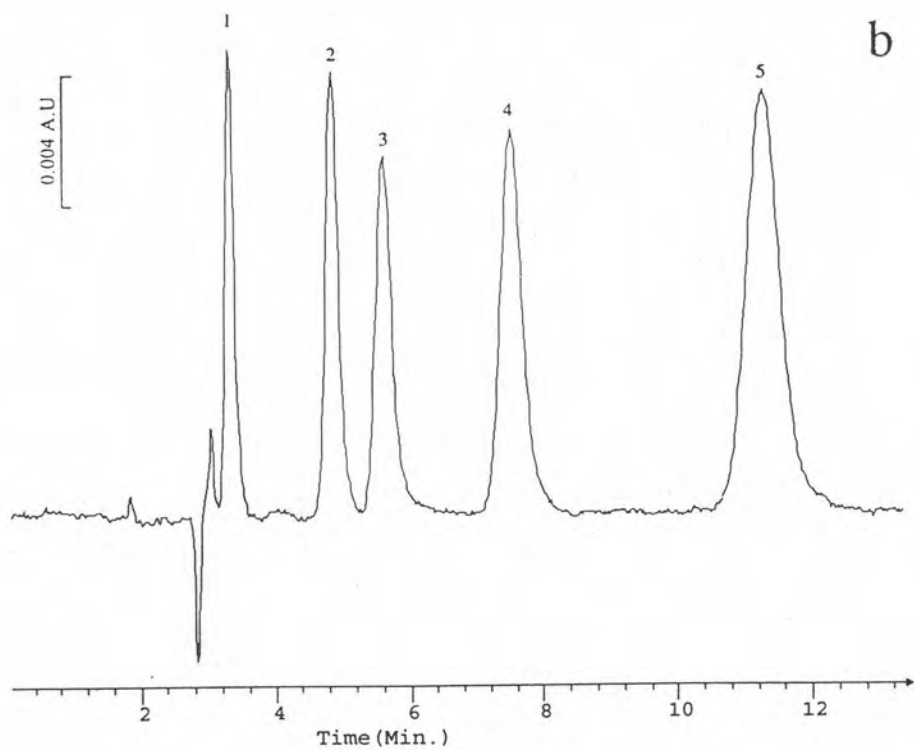


Figure A7. (continued)

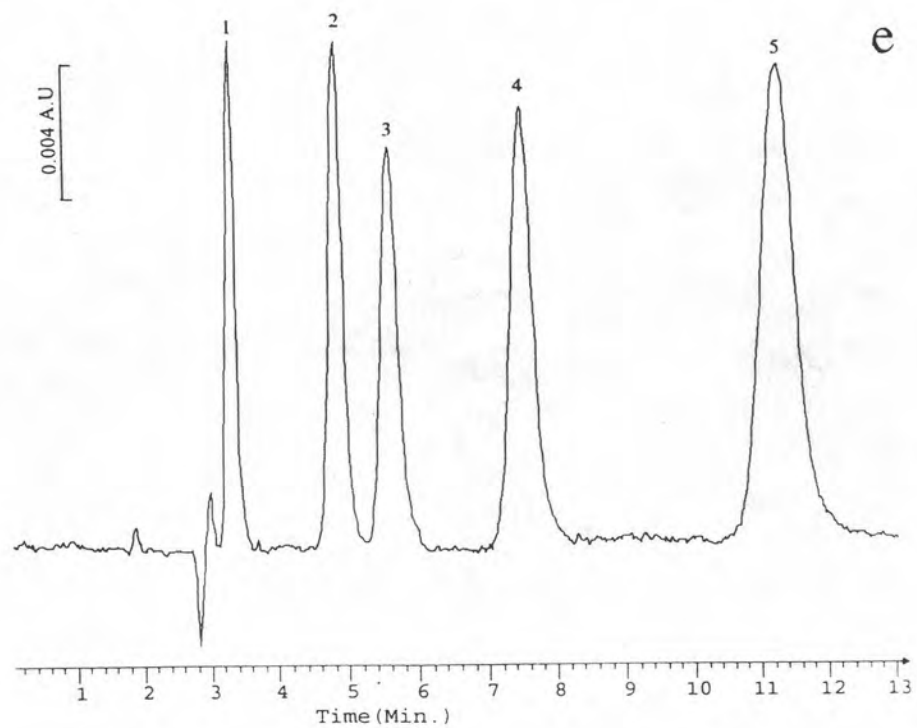
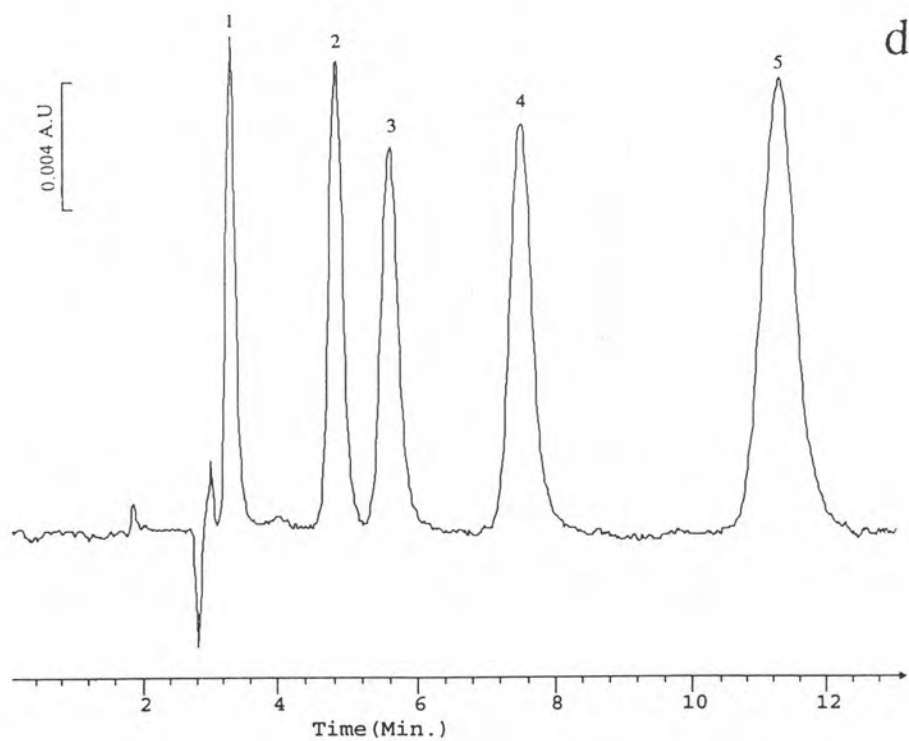


Figure A7. (continued)

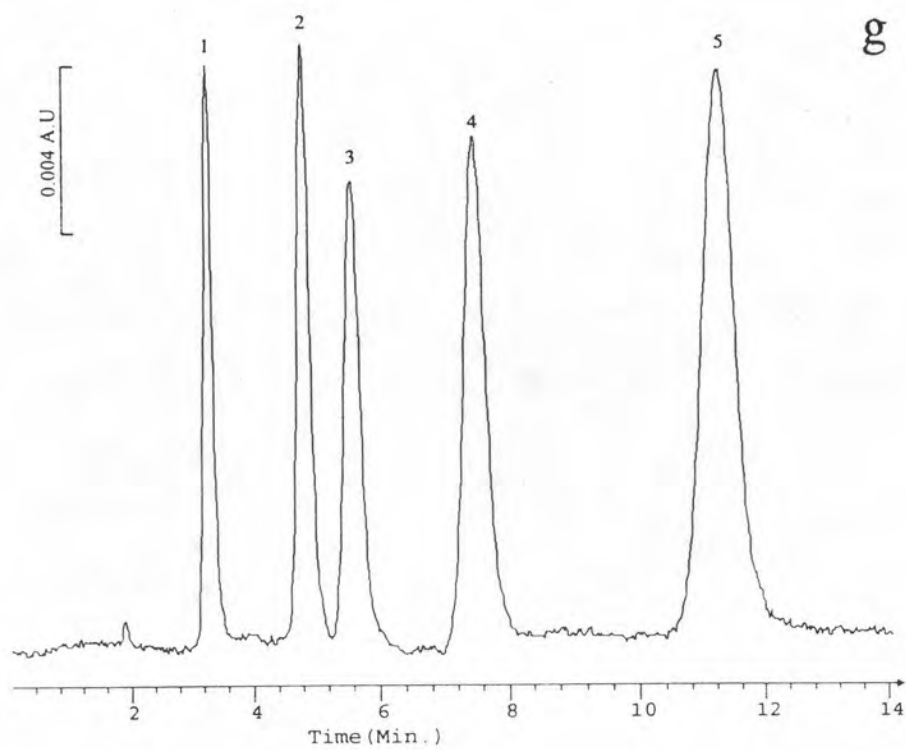
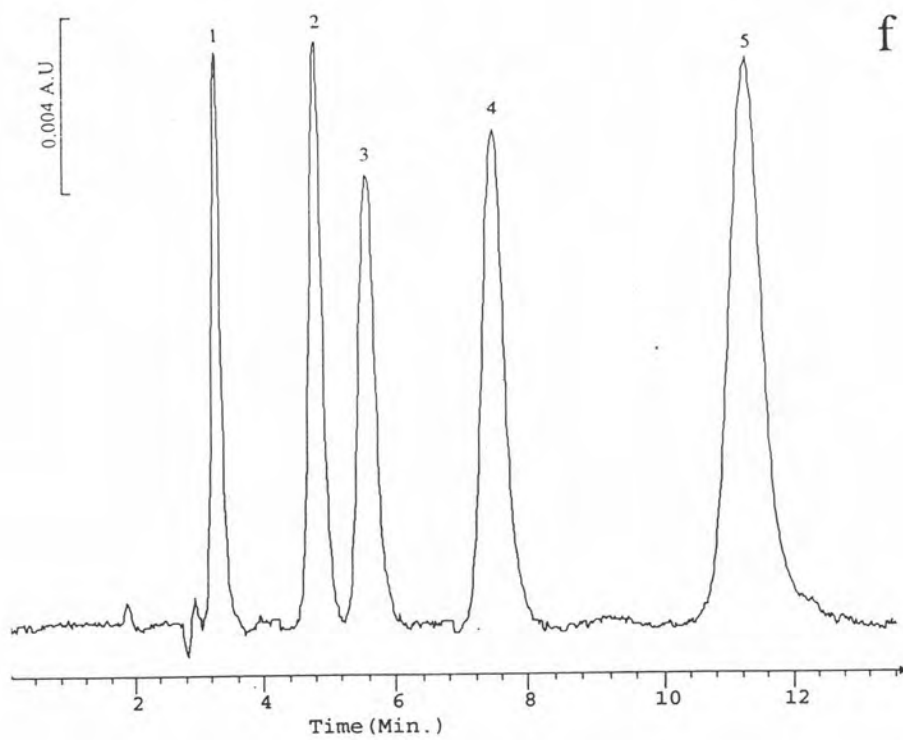


Figure A7. (continued)

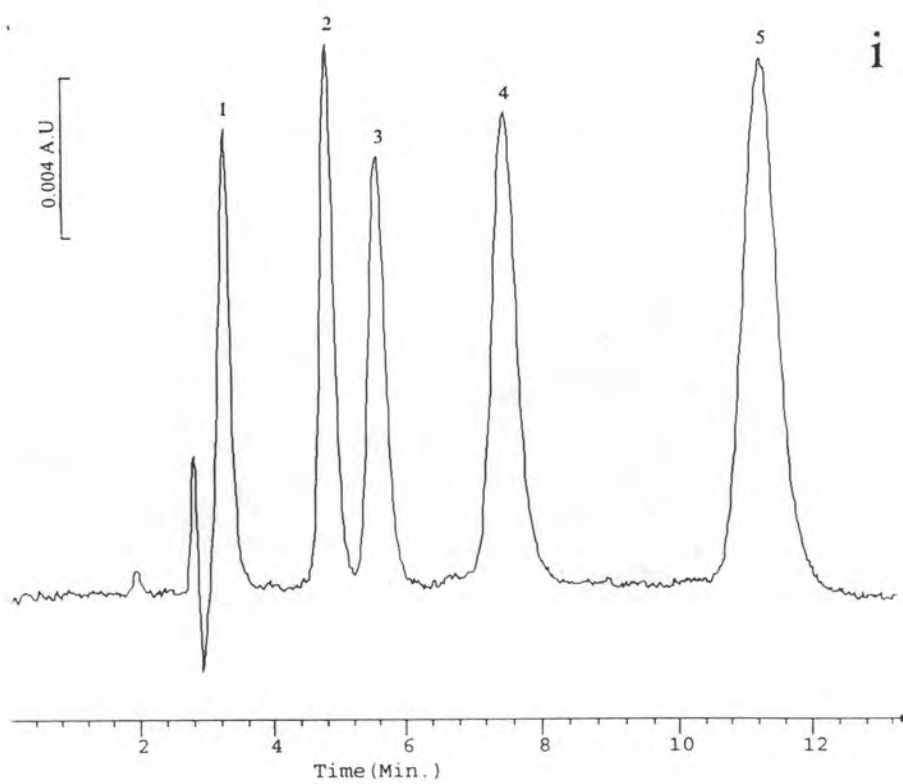
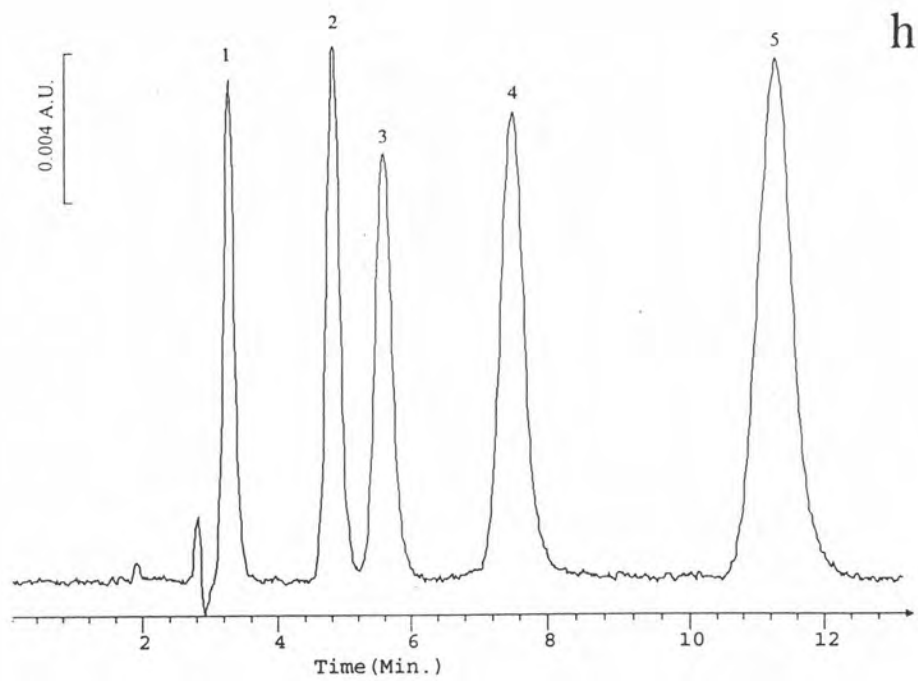


Figure A7. (continued)

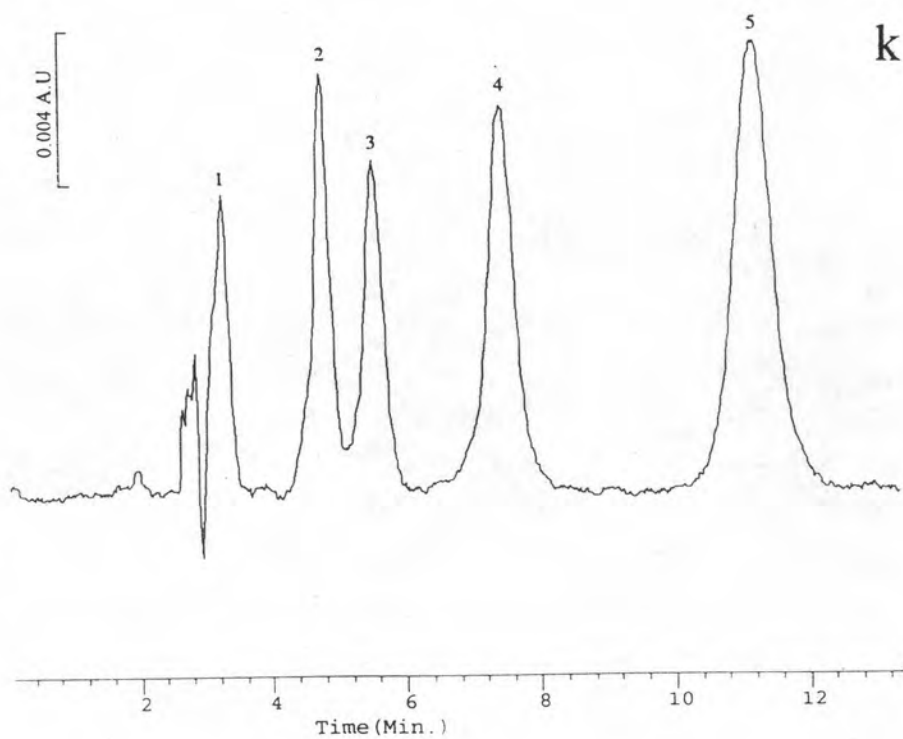
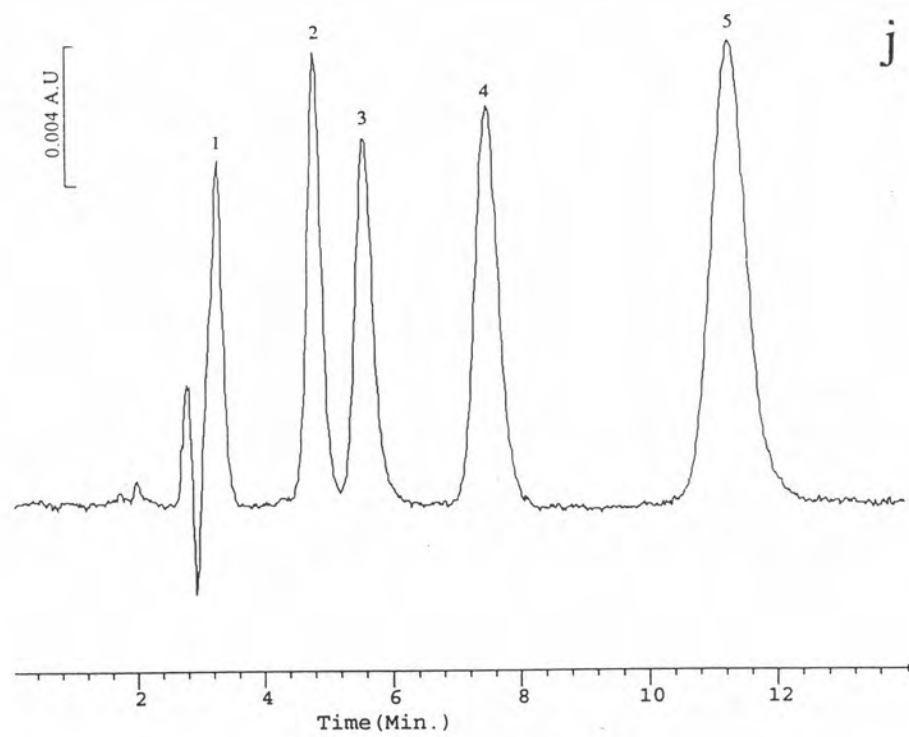


Figure A7. (continued)

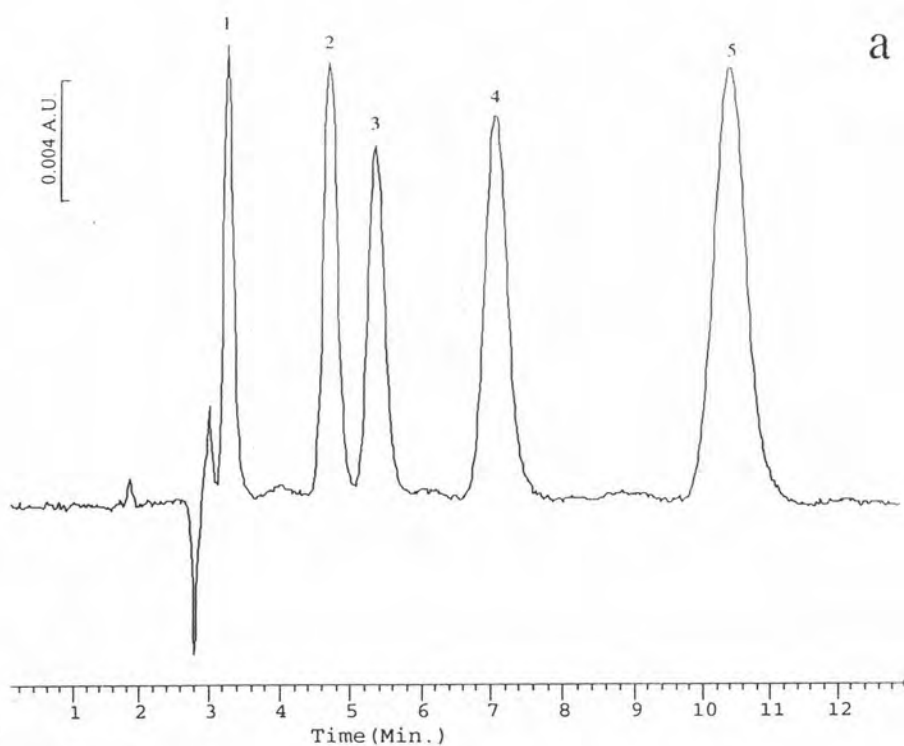


Figure A8 Chromatograms of standard mixtures of phenols dissolved in 2% methanol (a) , 10% methanol (b) , 20% methanol (c) , 30% methanol (d) , 40% methanol (e) , 50% methanol (f) , 60% methanol (g) , 70% methanol (h) , 80% methanol (i) , 90% methanol (j) and pure methanol (k) on reversed phase column. Peak identification and Chromatographic conditions as given in Figure 4.16

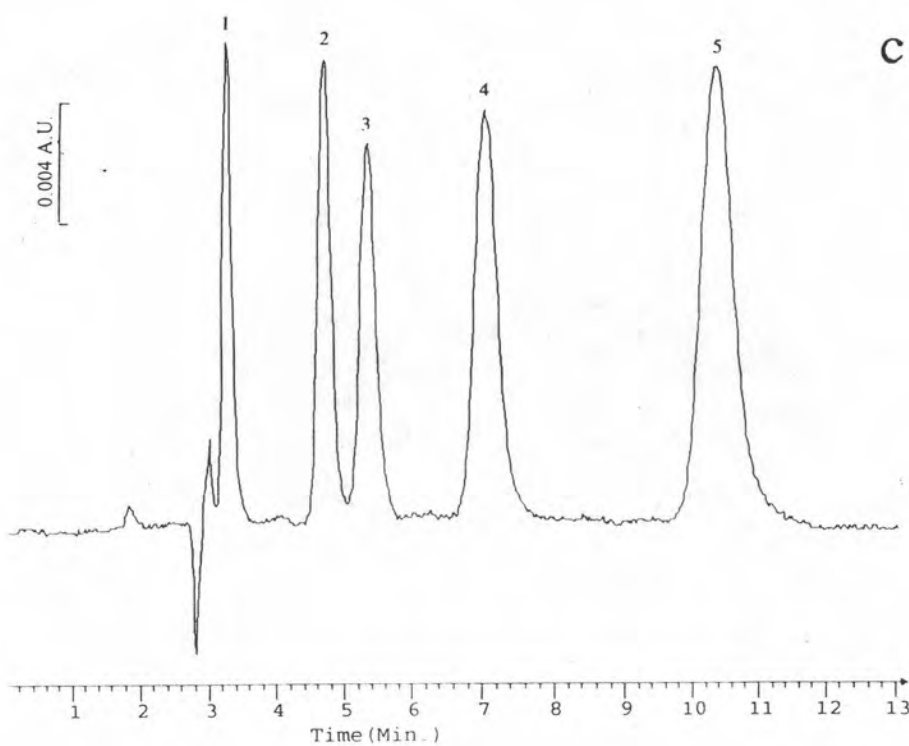
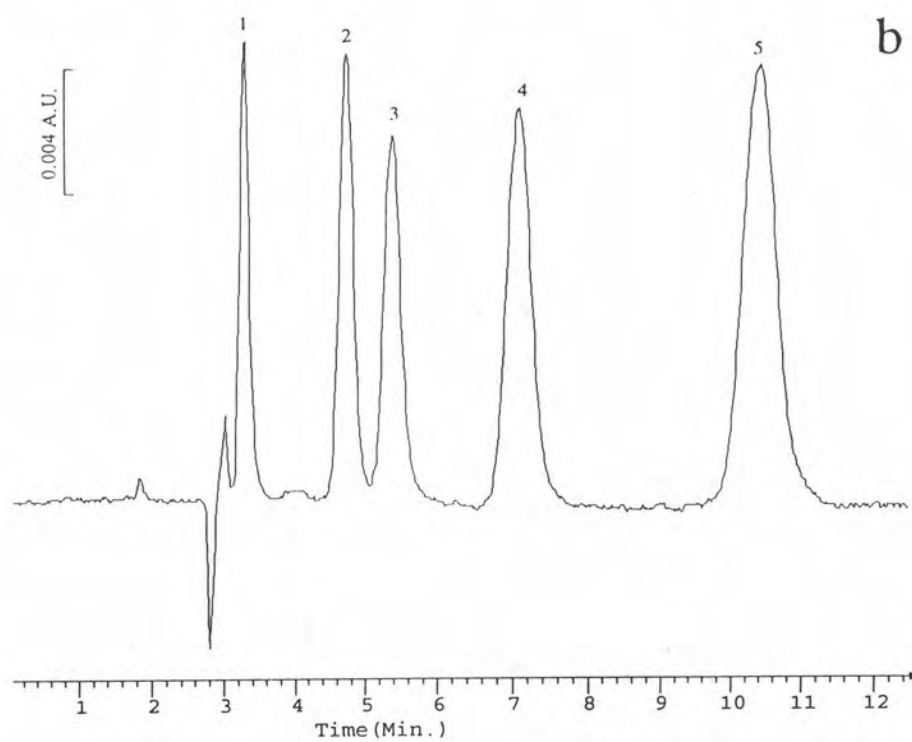


Figure A8. (continued)

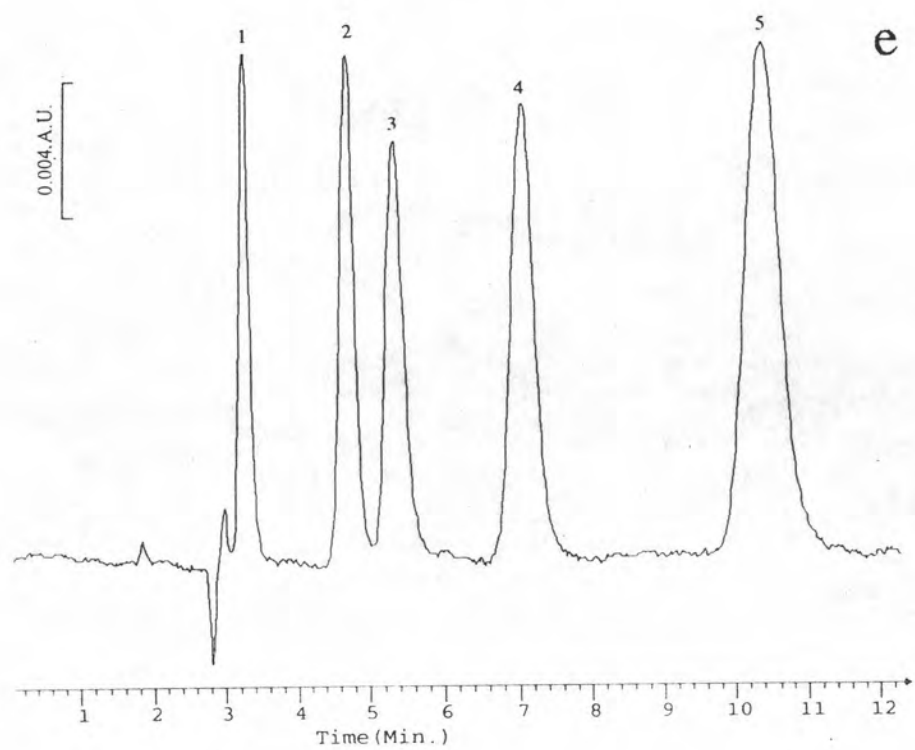
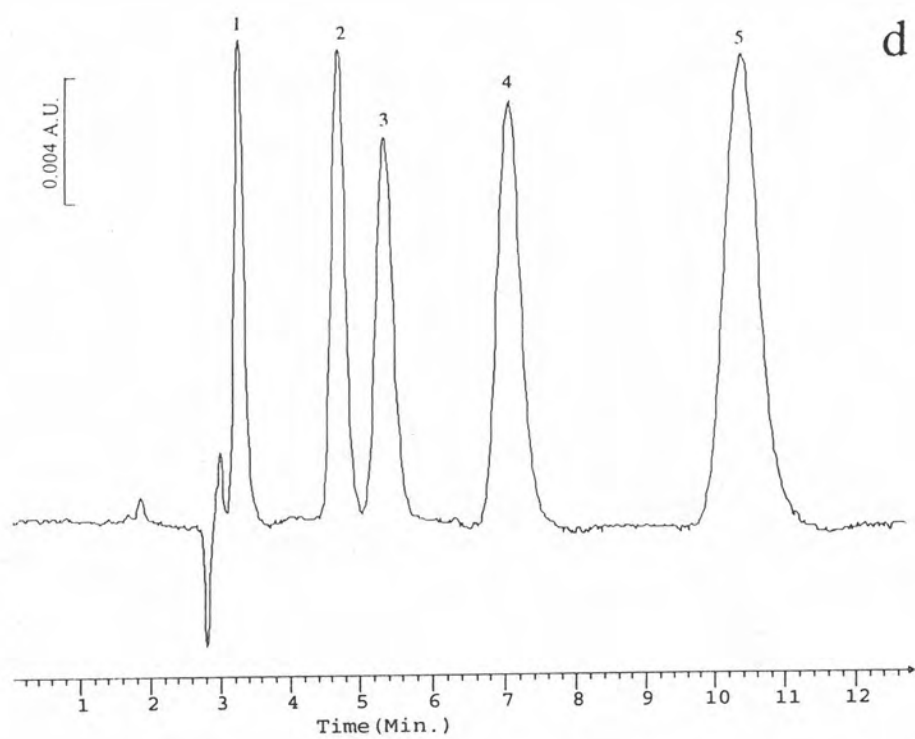


Figure A8. (continued)

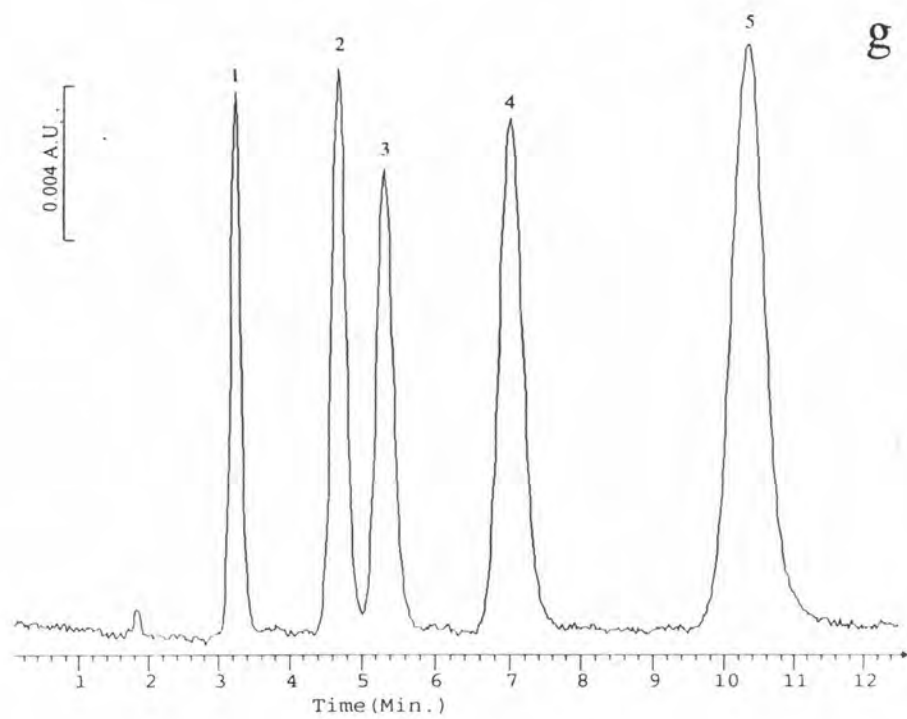
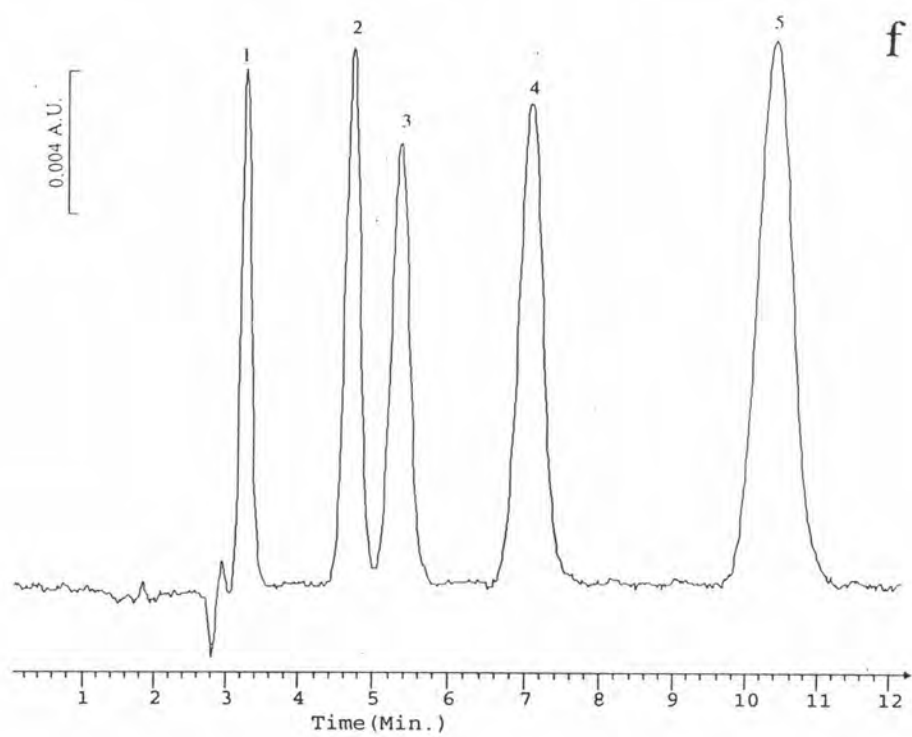


Figure A8. (continued)

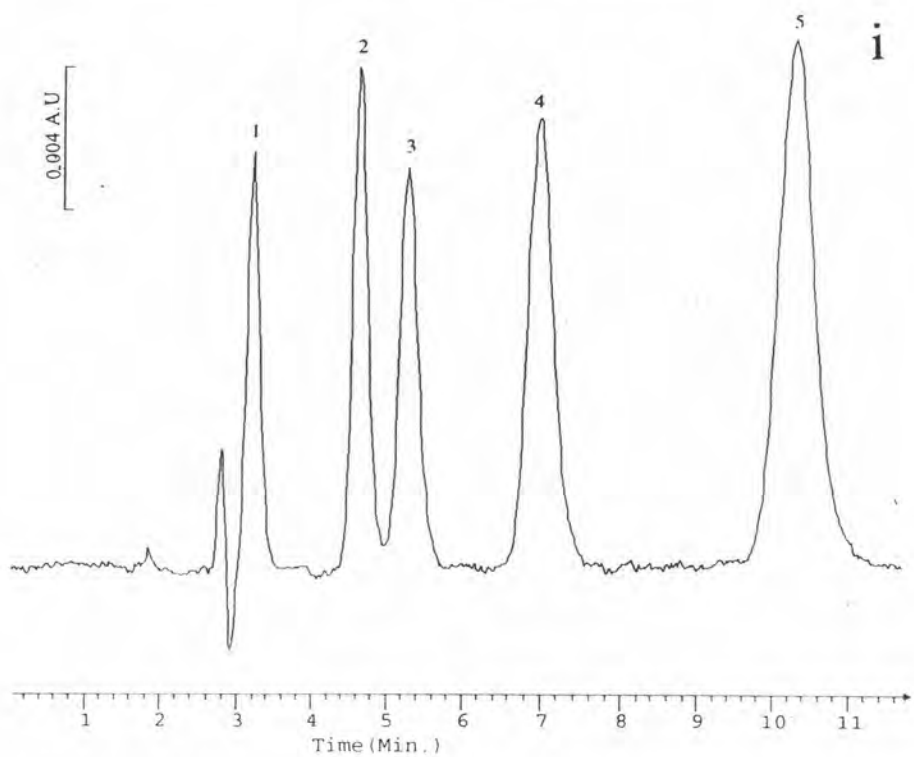
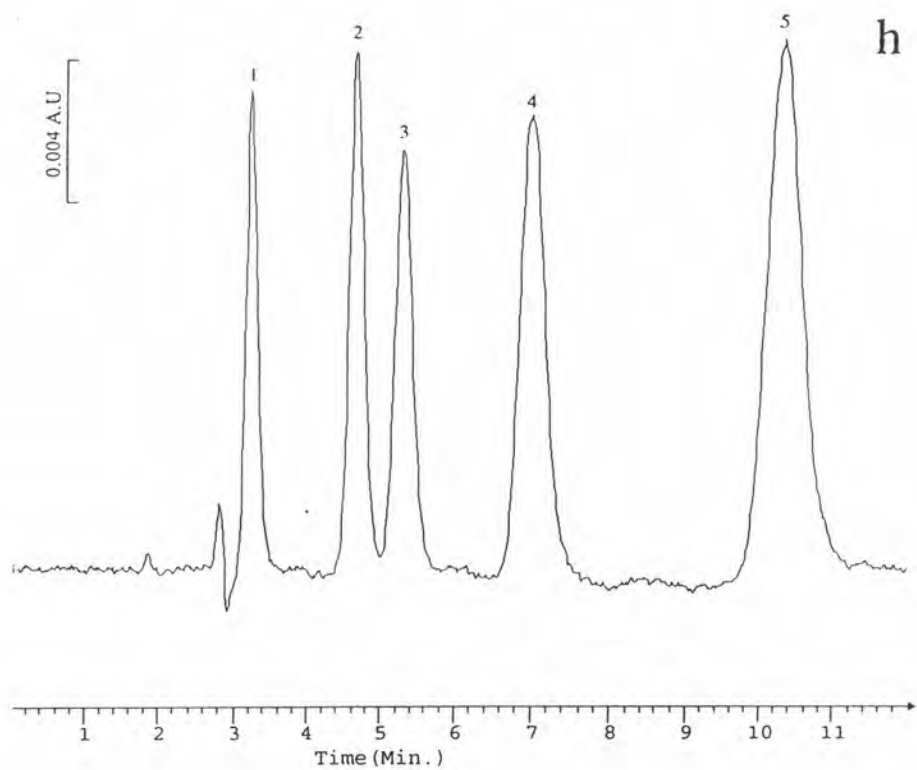


Figure A8. (continued)

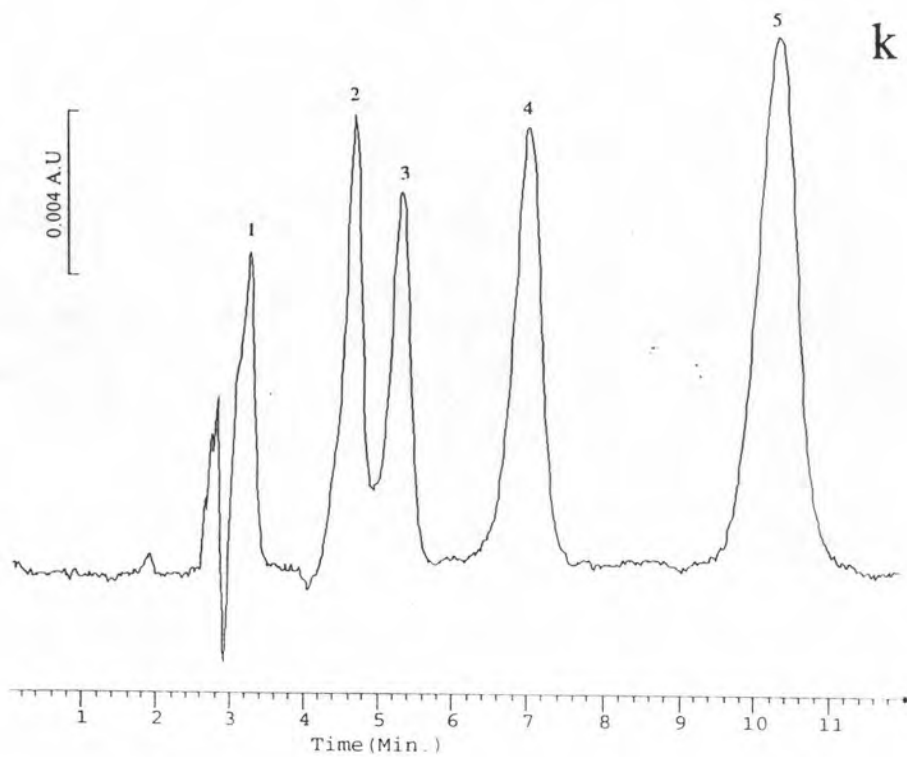
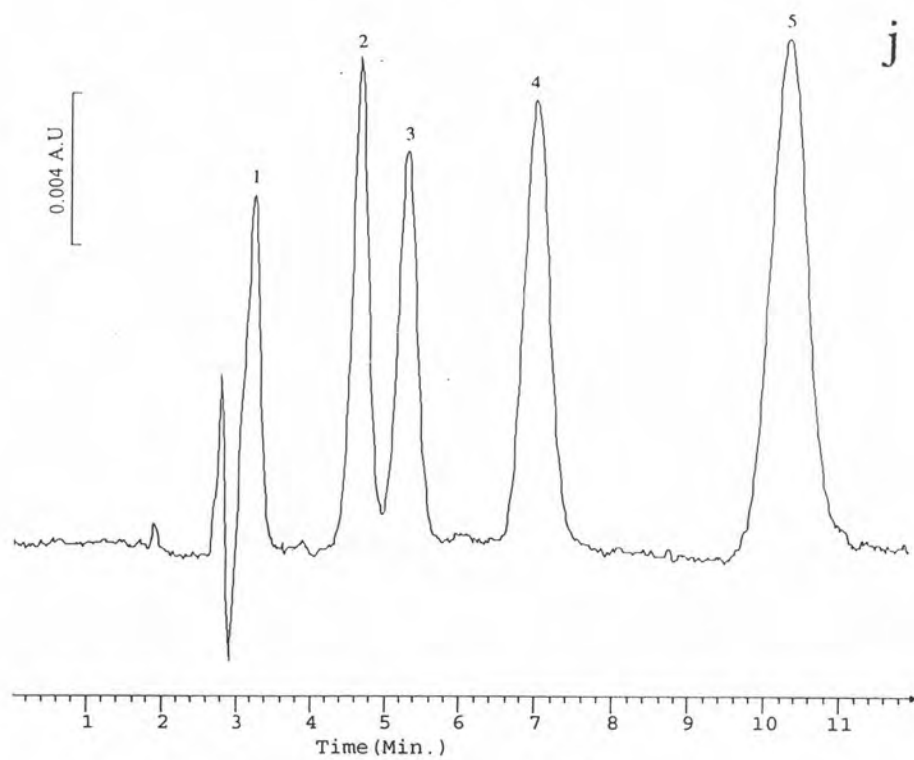


Figure A8. (continued)

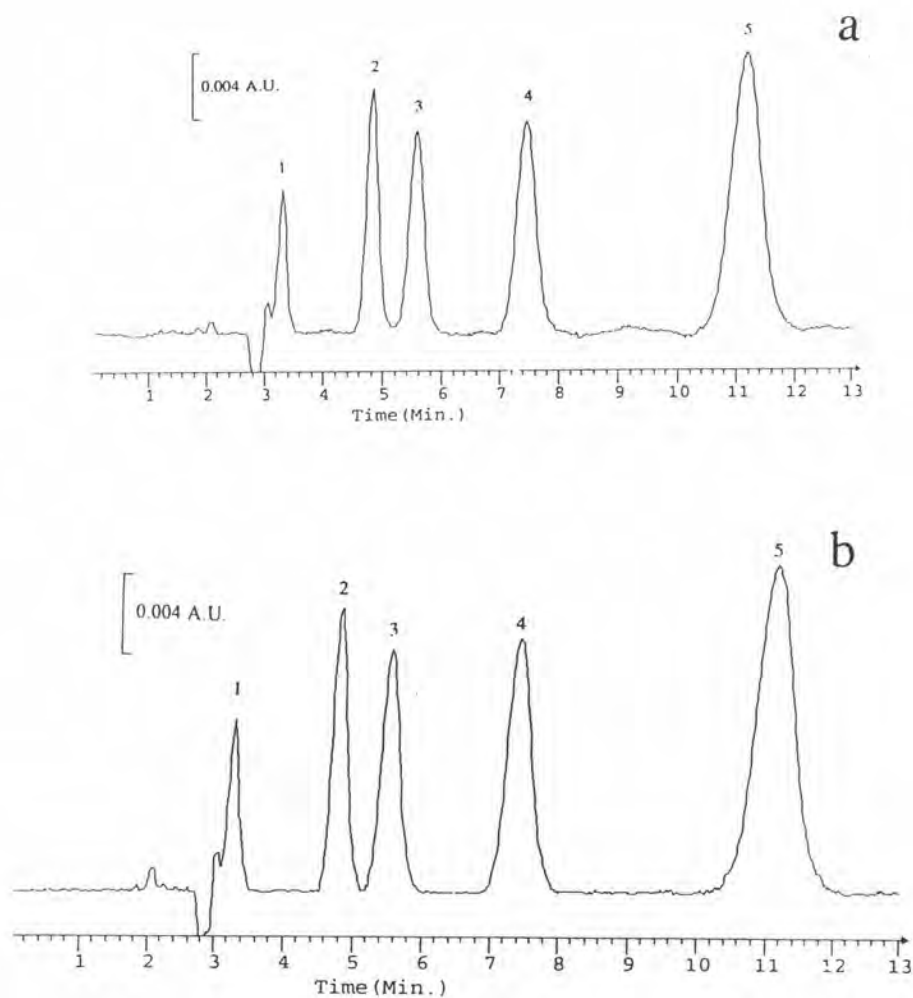


Figure A9 Chromatograms of standard mixtures of phenols dissolved in 2% methanol (a) , 10% methanol (b) , 20% methanol (c) , 30% methanol (d) , 40% methanol (e) , 50% methanol (f) , 60% methanol (g) , 70% methanol (h) , 80% methanol (i) , 90% methanol (j) and pure methanol (k) on reversed phase column. Peak identification and Chromatographic conditions as given in Figure 4.17

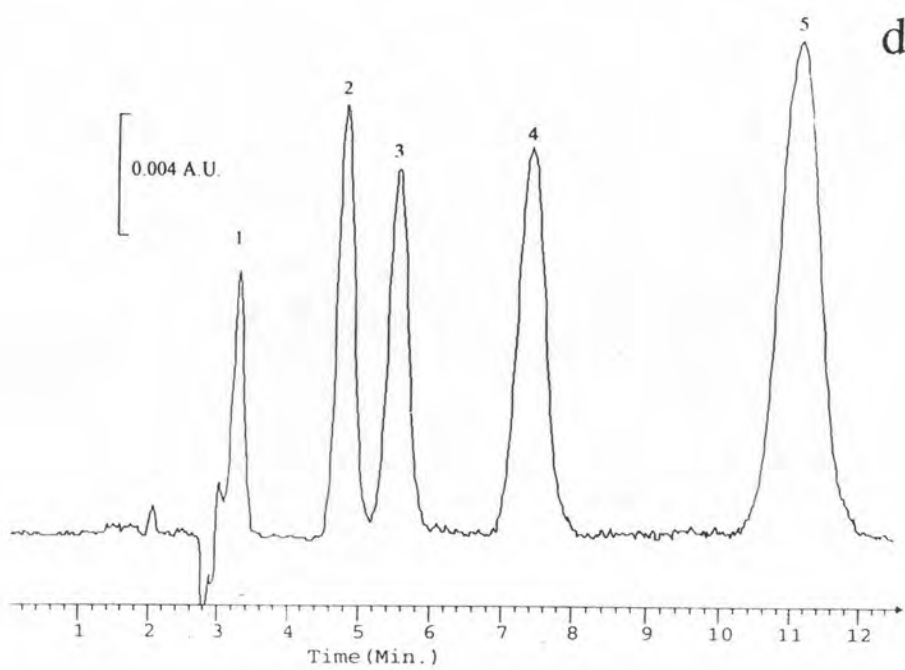
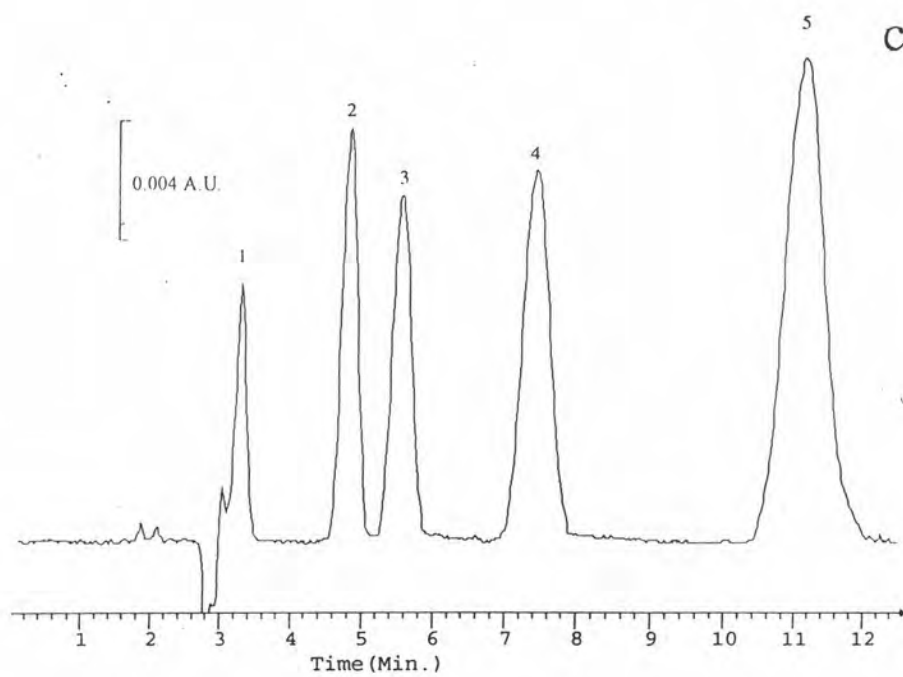


Figure A9. (continued)

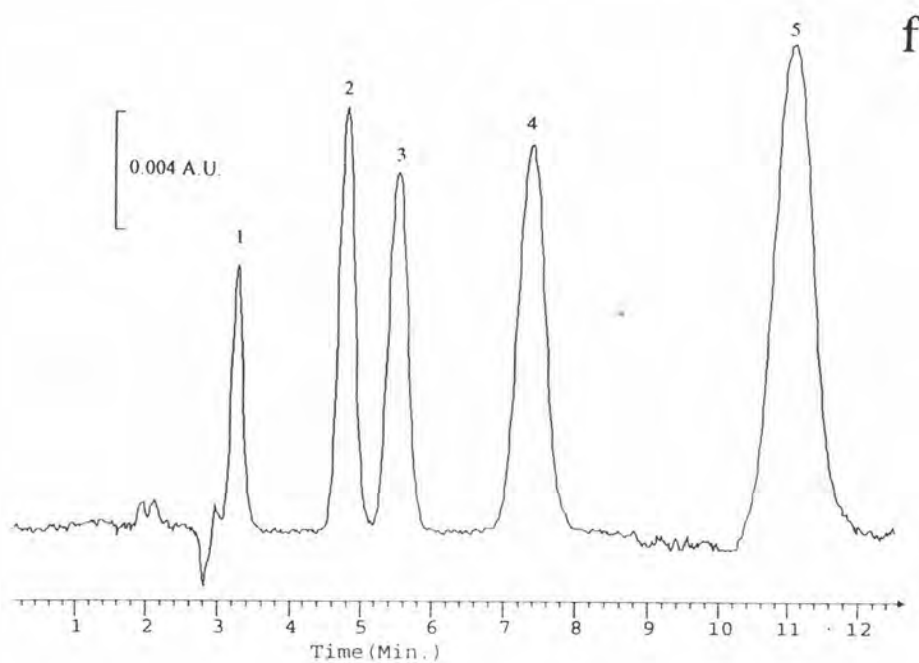
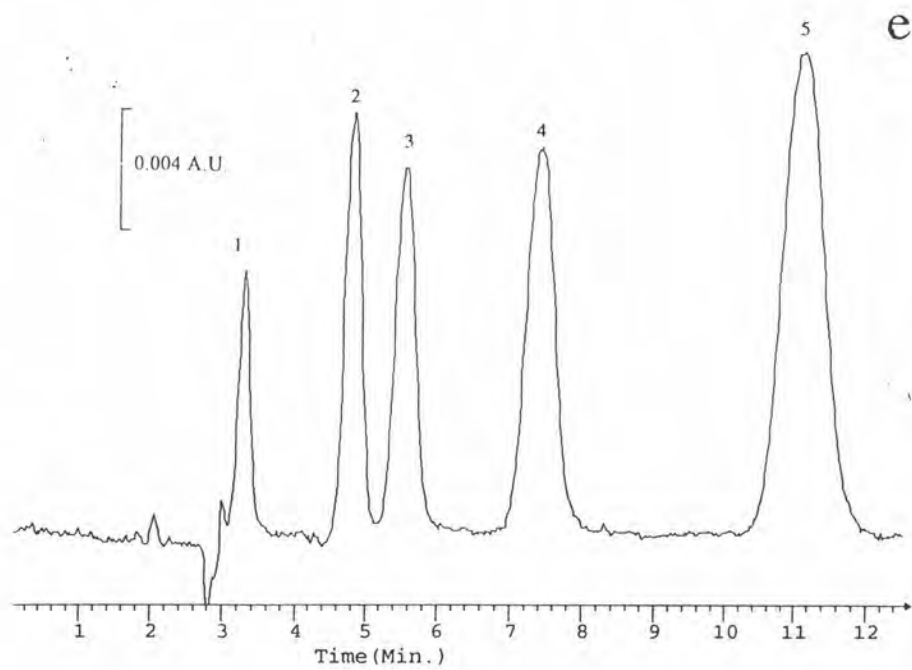


Figure A9. (continued)

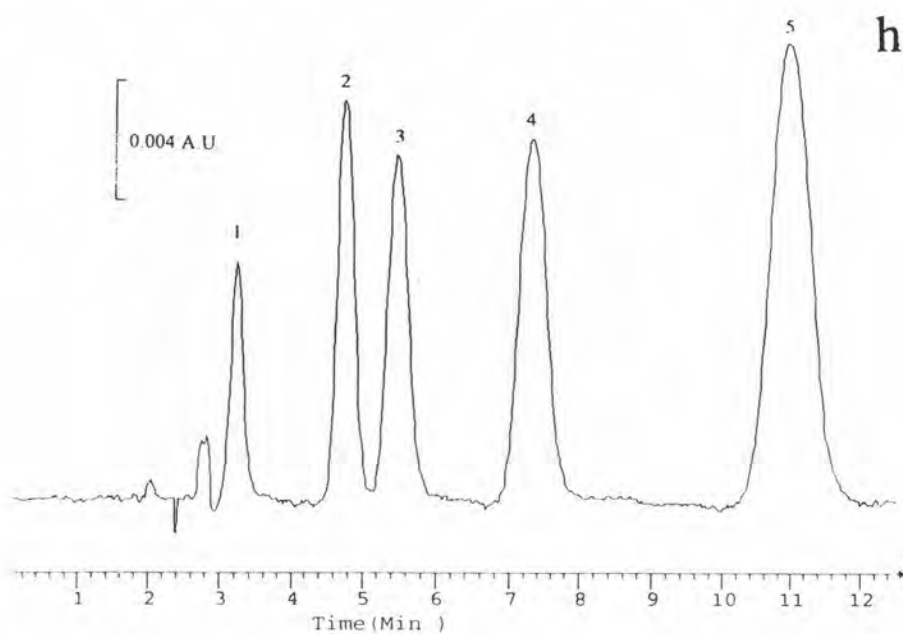
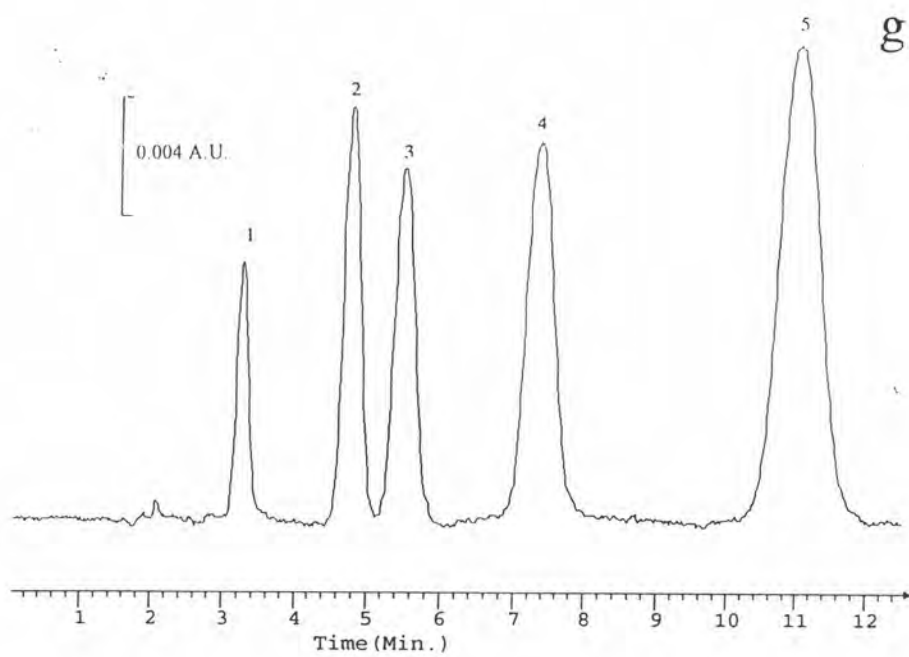


Figure A9. (continued)

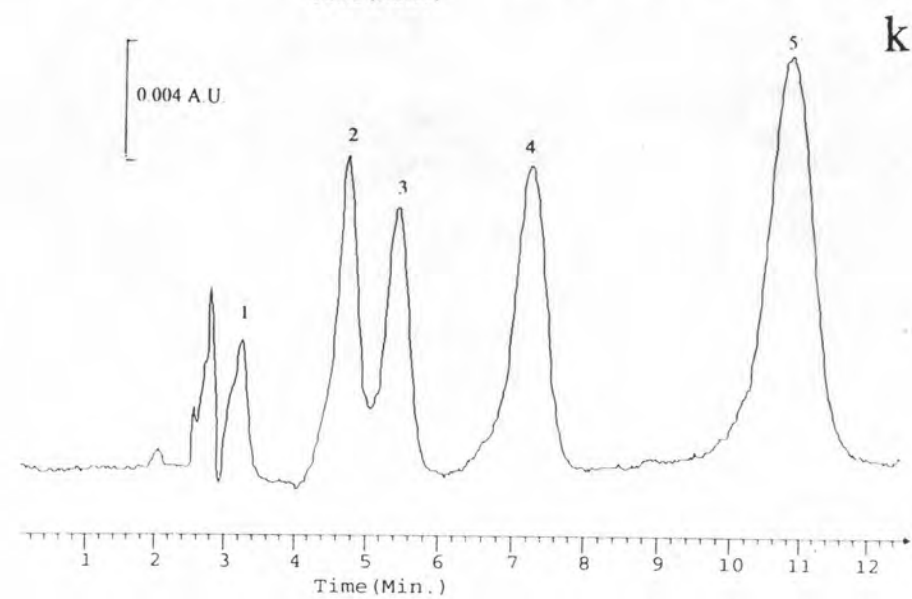
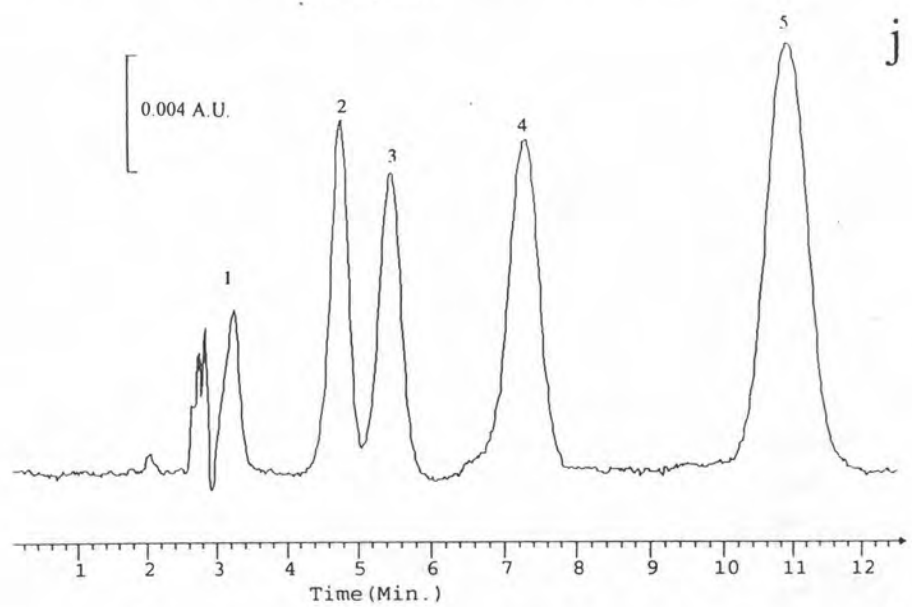
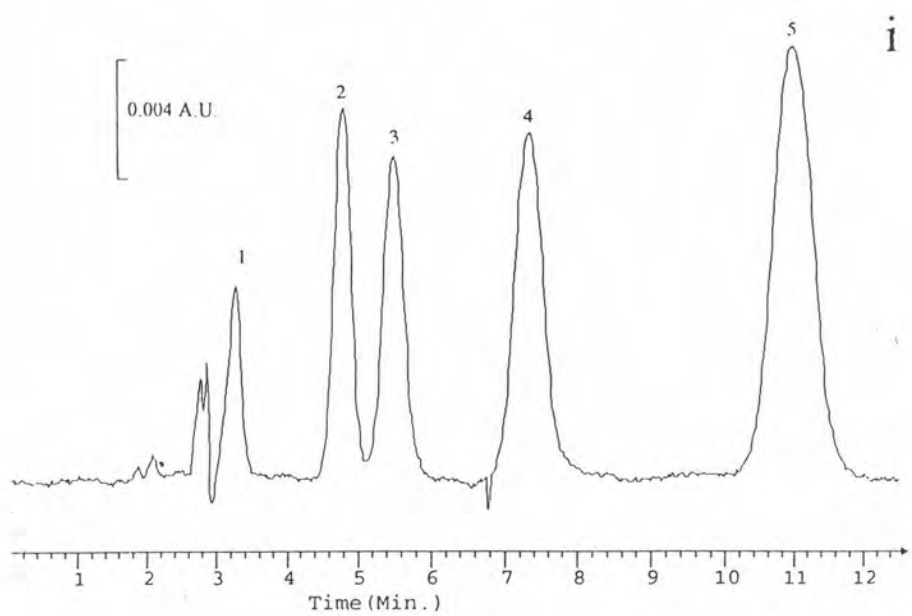


Figure A9. (continued)

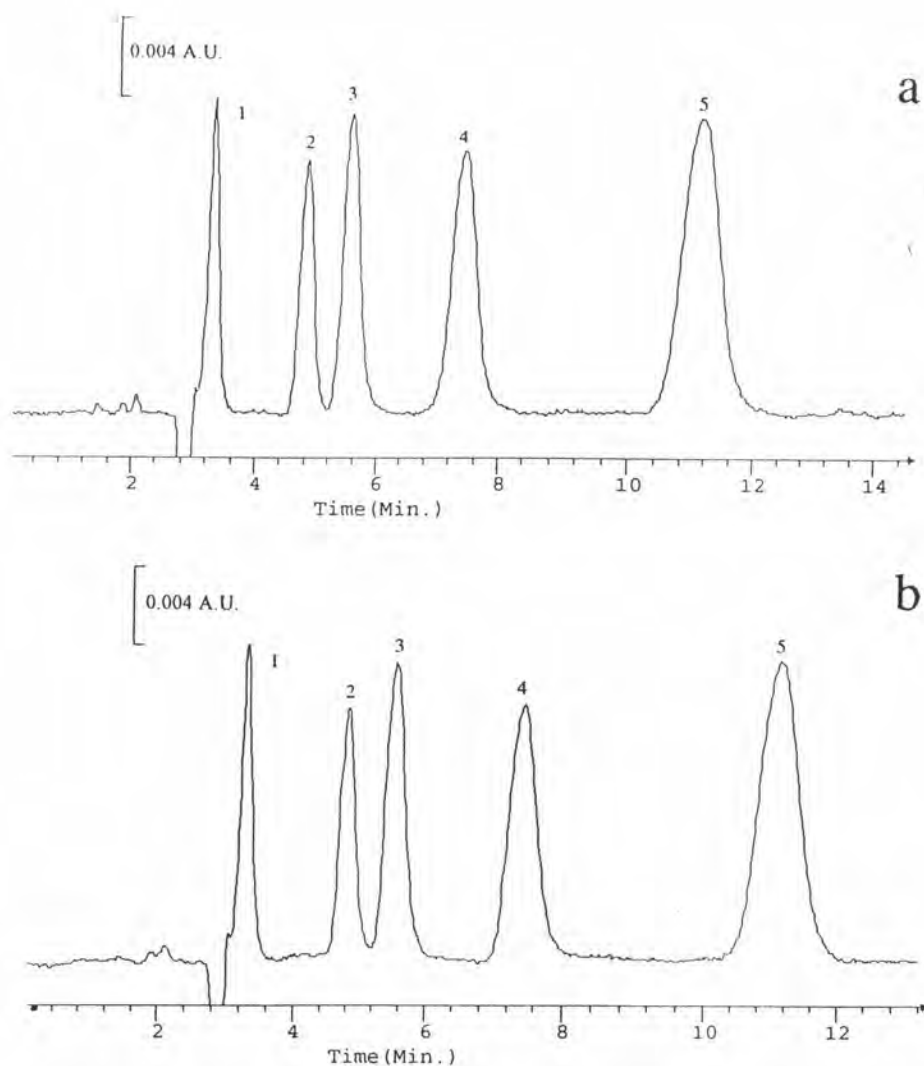


Figure A10 Chromatograms of standard mixtures of phenols dissolved in 2% methanol (a) , 10% methanol (b) , 20% methanol (c) , 30% methanol (d) , 40% methanol (e) , 50% methanol (f) , 60% methanol (g) , 70% methanol (h) , 80% methanol (i) , 90% methanol (j) and pure methanol (k) on reversed phase column. Peak identification and Chromatographic conditions as given in Figure 4.18

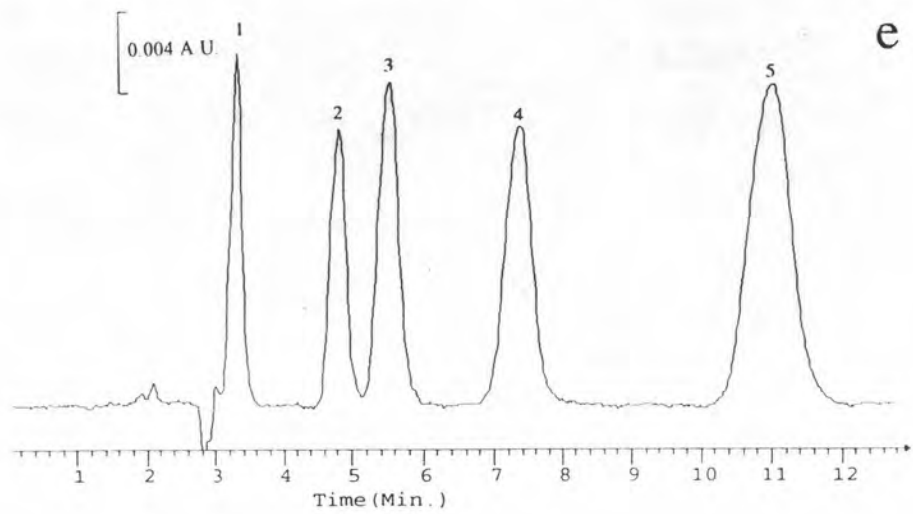
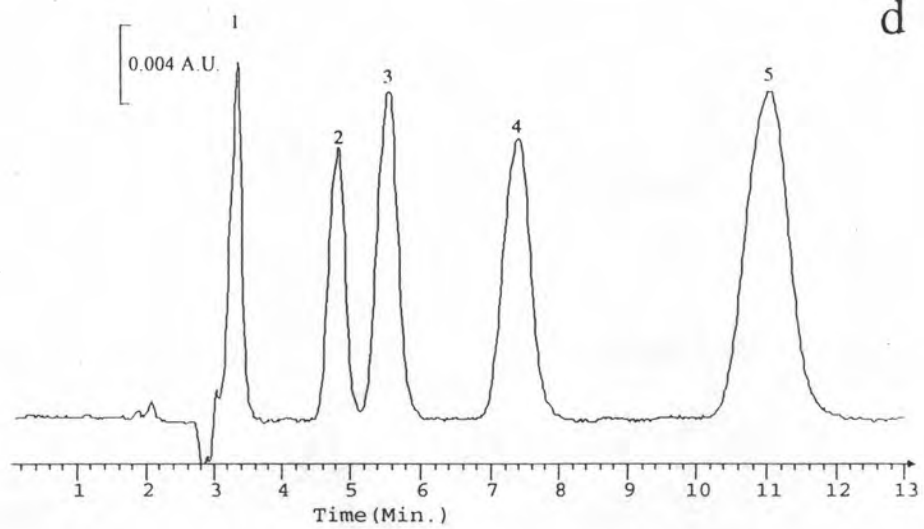
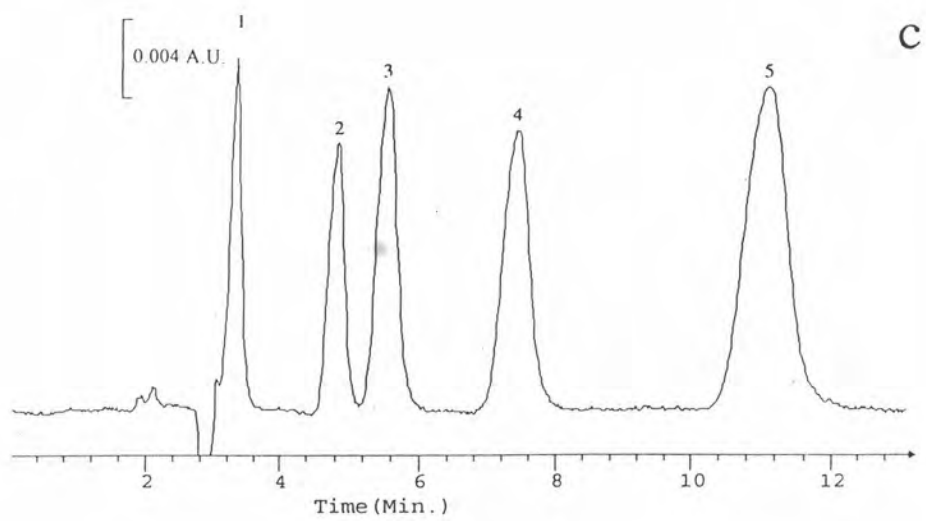


Figure A10. (continued)

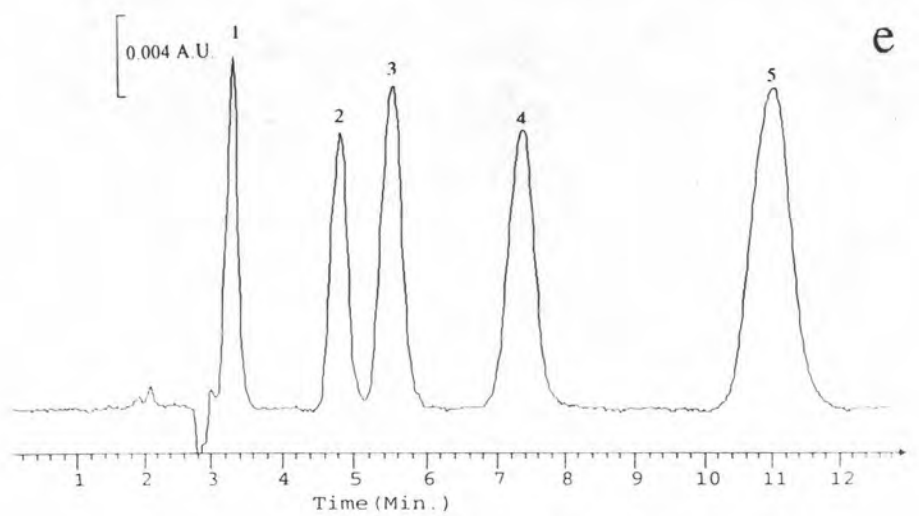
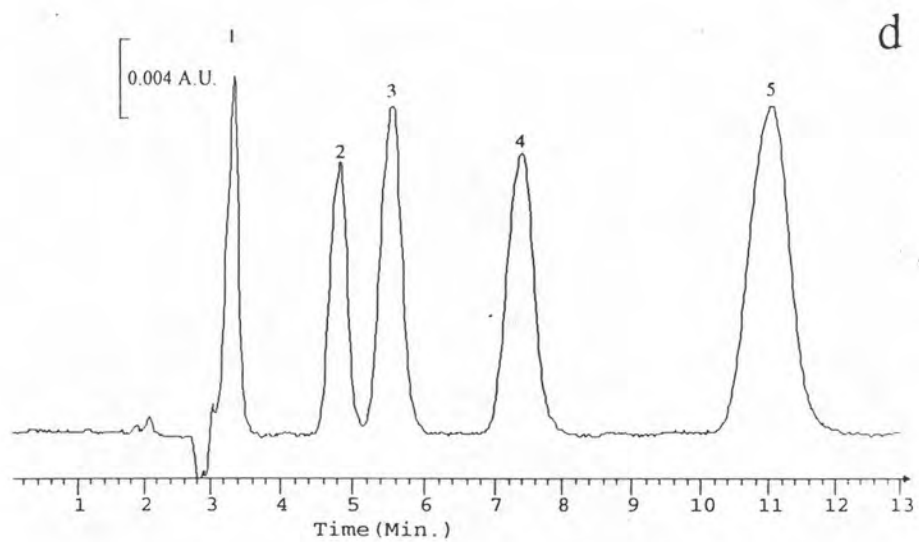
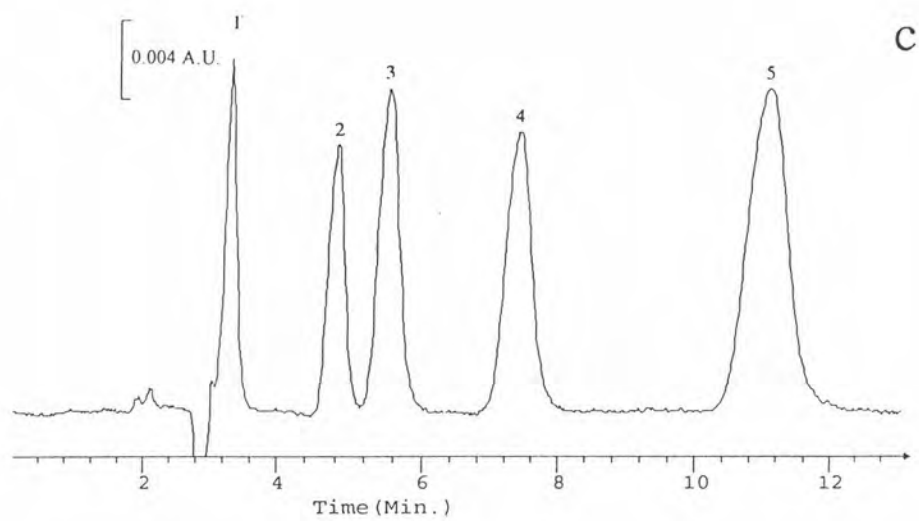


Figure A10. (continued)

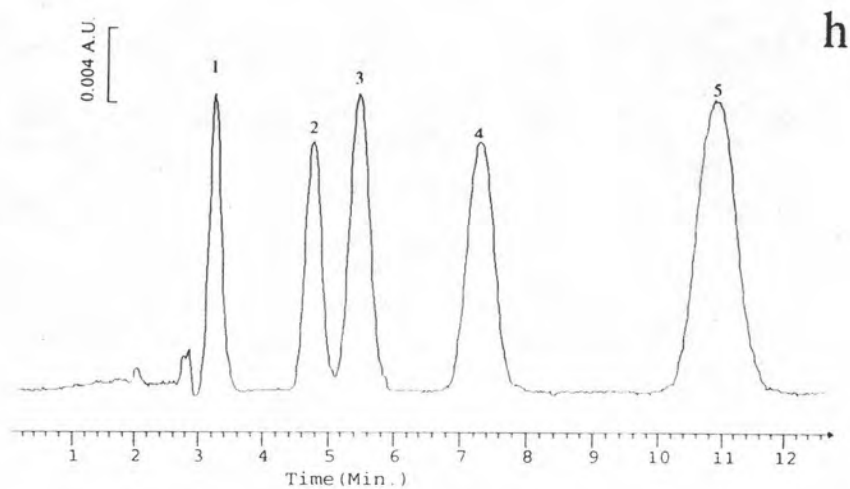
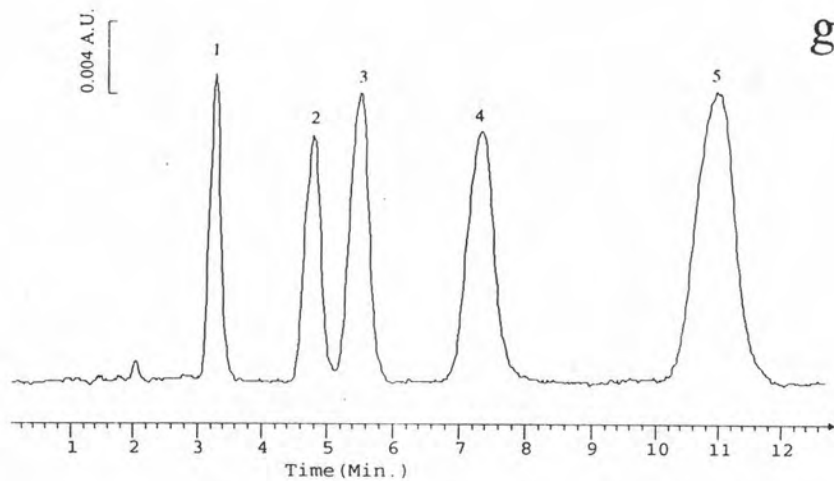
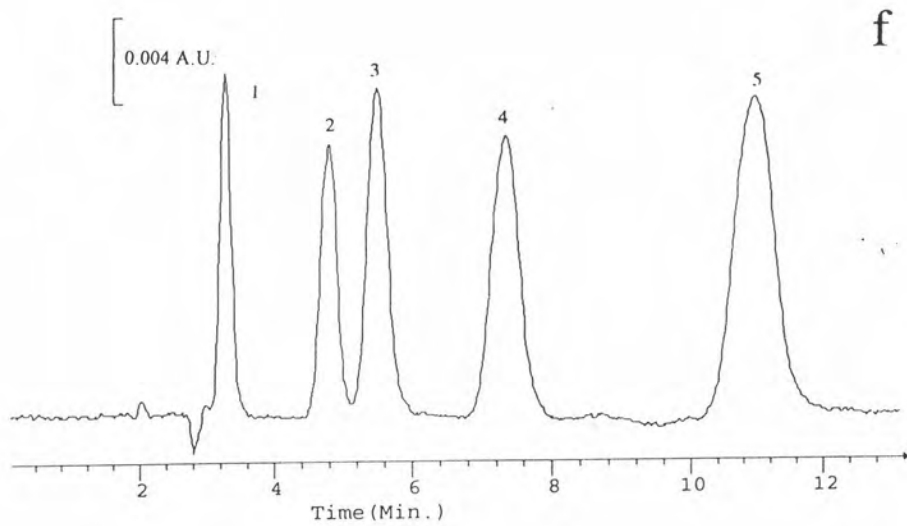


Figure A10. (continued)

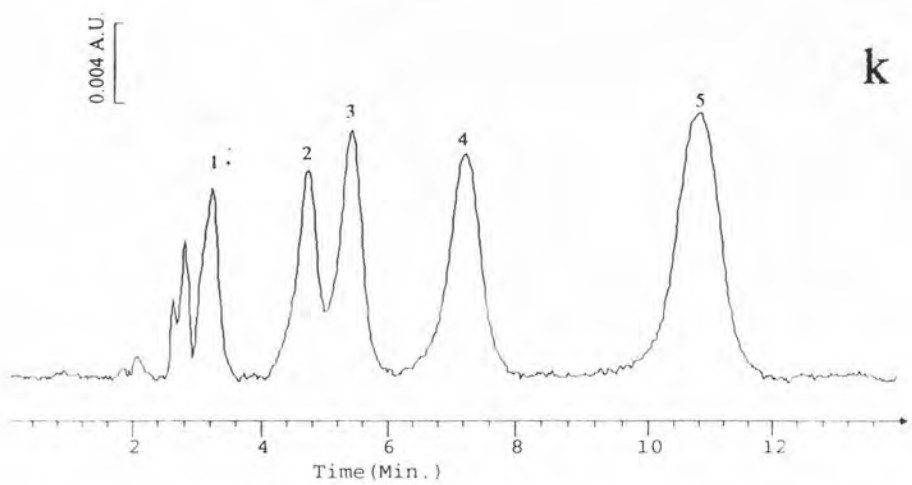
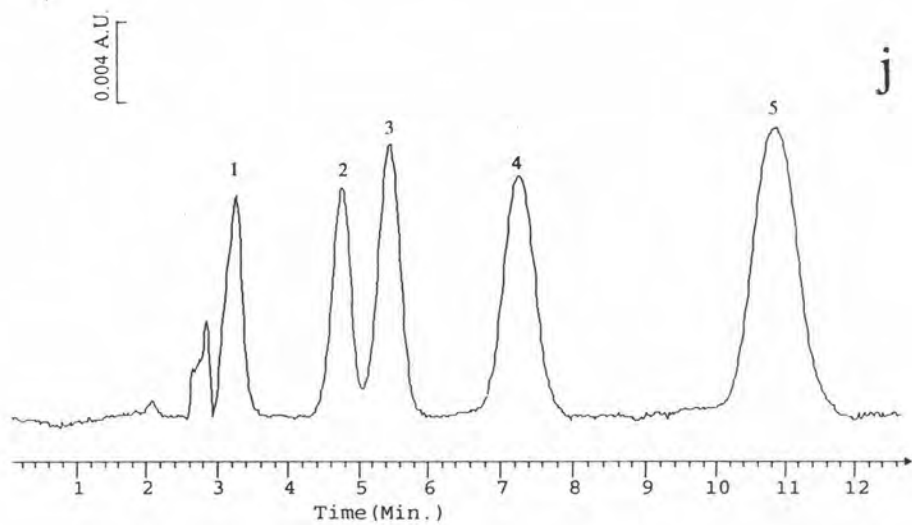
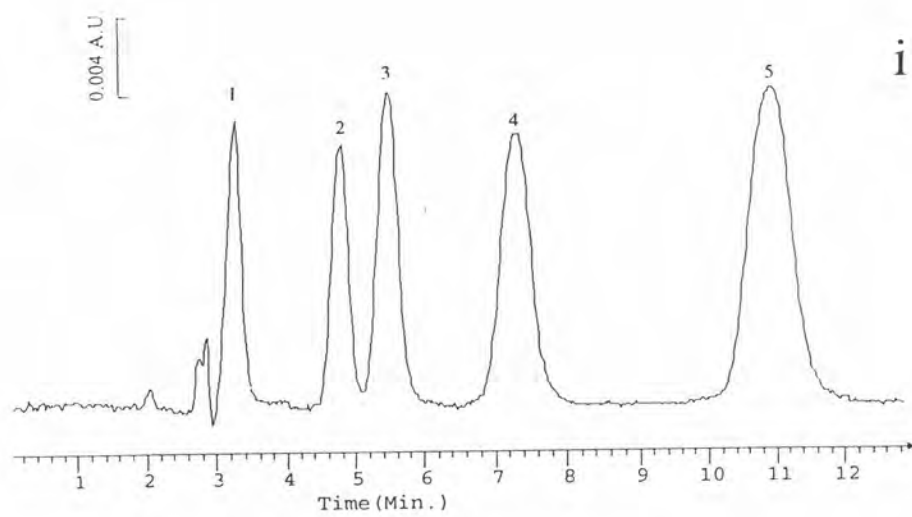


Figure A10. (continued)

APPENDIX B

Table B1 The effect of solvent strength on number of theoretical plates for each phenolic compound in standard mixtures at 20° C . The chromatographic conditions as given in Table 3.1

% (V/V) Water	Polarity Index (P _i)	Number of theoretical plates (N)				
		Compound				
		A	B	C	D	E
0	6.60	1377	1808	1774	1676	1637
10	7.08	1741	2262	2151	1956	1915
20	7.43	2101	2540	2370	2193	2156
30	7.78	2251	2662	2492	2309	2296
40	8.04	2338	2720	2522	2348	2319
50	8.26	2342	2731	2521	2353	2327
60	8.45	2352	2721	2528	2349	2319
70	8.62	2344	2715	2520	2346	2325
80	8.76	2353	2730	2525	2343	2322
90	8.89	2346	2725	2521	2365	2317
98	9.00	2355	2720	2522	2373	2319

Note A = Paracetamol D = Ethylparaben
 B = Phenol E = Propylparaben
 C = Methylparaben

Table B2 The effect of solvent strength on number of theoretical plates for each phenolic compound in standard mixtures at 25° C . The chromatographic conditions as given in Table 3.1

% (V/V) Water	Polarity Index (P _i)	Number of theoretical plates (N)				
		Compound				
		A	B	C	D	E
0	6.60	1487	1856	1829	1783	1758
10	7.08	1840	2308	2157	2058	2018
20	7.43	2172	2593	2384	2234	2221
30	7.78	2452	2734	2546	2401	2392
40	8.04	2596	2793	2649	2508	2435
50	8.26	2605	2786	2639	2504	2427
60	8.45	2613	2783	2651	2493	2423
70	8.62	2601	2790	2650	2509	2433
80	8.76	2615	2785	2648	2493	2429
90	8.89	2613	2791	2651	2509	2421
98	9.00	2605	2783	2662	2512	2432

Note A = Paracetamol

B = Phenol

C = Methylparaben

D = Ethylparaben

E = Propylparaben

Table B3 The effect of solvent strength on the chromatographic behavior for each phenolic compound in standard mixtures at 30° C. The chromatographic conditions as given in Table 3.1

% (V/V) Water	Polarity Index (P _i)	Number of theoretical plates (N)				
		Compound				
		A	B	C	D	E
0	6.60	1653	2116	2205	2047	1954
10	7.08	2018	2522	2619	2463	2421
20	7.43	2405	2978	2985	2801	2718
30	7.78	2656	3341	3184	3042	2297
40	8.04	2837	3521	3271	3104	3050
50	8.26	2844	3537	3270	3104	3051
60	8.45	2843	3548	3282	3101	3052
70	8.62	2846	3537	3269	3091	3054
80	8.76	2851	3534	3279	3092	3057
90	8.89	2849	3542	3282	3096	3051
98	9.00	2849	3539	3287	3091	3055

Note A = Paracetamol

B = Phenol

C = Methylparaben

D = Ethylparaben

E = Propylparaben

Table B4 The effect of solvent strength on number of theoretical plates for each phenolic compound in standard mixtures at 35°C . The chromatographic conditions as given in Table 3.1

% (V/V) Water	Polarity Index (P _i)	Number of theoretical plates (N)				
		Compound				
		A	B	C	D	E
0	6.60	1561	1987	2198	1983	1853
10	7.08	1886	2338	2557	2403	2306
20	7.43	2262	2862	2843	2694	2584
30	7.78	2572	3259	2986	2905	2804
40	8.04	2654	3404	3095	2983	2887
50	8.26	2654	3392	3110	2992	2888
60	8.45	2661	3410	3105	2983	2881
70	8.62	2648	3410	3100	2986	2890
80	8.76	2655	3406	3102	2982	2887
90	8.89	2652	3410	3097	2981	2883
98	9.00	2660	3418	3100	2981	2887

Note A = Paracetamol

B = Phenol

C = Methylparaben

D = Ethylparaben

E = Propylparaben

Table B5 The effect of solvent strength on number of theoretical plates for each phenolic compound in standard mixtures at 20^o C . The chromatographic conditions as given in Table 3.2

% (V/V) Water	Polarity Index (P _i)	Number of theoretical plates (N)				
		Compound				
		A	B	C	D	E
0	6.60	1088	2030	1986	1863	1847
10	7.08	1851	2279	2292	2193	2093
20	7.43	2531	2463	2403	2319	2249
30	7.78	2755	2726	2537	2390	2314
40	8.04	2909	2850	2572	2421	2406
50	8.26	2918	2853	2574	2418	2400
60	8.45	2926	2857	2570	2422	2405
70	8.62	2900	2853	2582	2417	2409
80	8.76	2903	2849	2577	2428	2406
90	8.89	2903	2854	2583	2420	2408
98	9.00	3256	2876	2584	2414	2409

Note A = Paracetamol

B = Phenol

C = Methylparaben

D = Ethylparaben

E = Propylparaben

Table B6 The effect of solvent strength on number of theoretical plates for each phenolic compound in standard mixtures at 25° C . The chromatographic conditions as given in Table 3.2

% (V/V) Water	Polarity Index (P _i)	Number of theoretical plates (N)				
		Compound				
		A	B	C	D	E
0	6.60	938	1797	1856	1756	1613
10	7.08	1693	2171	2136	1973	1958
20	7.43	2349	2394	2213	2105	2051
30	7.78	2691	2492	2313	2189	2117
40	8.04	2787	2541	2342	2207	2153
50	8.26	2793	2549	2339	2214	2146
60	8.45	2790	2544	2336	2206	2148
70	8.62	2795	2553	2353	2201	2158
80	8.76	2792	2548	2333	2208	2145
90	8.89	2801	2558	2314	2203	2155
98	9.00	2825	2543	2333	2211	2153

Note A = Paracetamol

B = Phenol

C = Methylparaben

D = Ethylparaben

E = Propylparaben

Table B7 The effect of solvent strength on number of theoretical plates for each phenolic compound in standard mixtures at 30° C . The chromatographic conditions as given in Table 3.2

% (V/V) Water	Polarity Index (P _i)	Number of theoretical plates (N)				
		Compound				
		A	B	C	D	E
0	6.60	756	1340	1443	1378	1309
10	7.08	1129	1633	1693	1587	1489
20	7.43	1531	1918	1817	1782	1703
30	7.78	1889	2159	1983	1887	1828
40	8.04	2055	2362	2056	1957	1865
50	8.26	2053	2345	2057	1952	1864
60	8.45	2060	2345	2056	1948	1869
70	8.62	2043	2372	2054	1947	1864
80	8.76	2071	2368	2062	1939	1866
90	8.89	2074	2354	2057	1955	1865
98	9.00	2045	2641	2310	2200	2045

Note A = Paracetamol

B = Phenol

C = Methylparaben

D = Ethylparaben

E = Propylparaben

Table B8 The effect of solvent strength on number of theoretical plates for each phenolic compound in standard mixtures at 35° C . The chromatographic conditions as given in Table 3.2

% (V/V) Water	Polarity Index (P _i)	Number of theoretical plates (N)				
		Compound				
		A	B	C	D	E
0	6.60	704	1010	1194	1168	1168
10	7.08	1088	1423	1452	1354	1292
20	7.43	1341	1655	1607	1463	1410
30	7.78	1643	1810	1713	1557	1502
40	8.04	1867	1961	1768	1610	1542
50	8.26	1852	1959	1757	1614	1546
60	8.45	1862	1950	1755	1614	1546
70	8.62	1874	1974	1770	1618	1542
80	8.76	1852	1935	1753	1625	1546
90	8.89	1850	1952	1753	1612	1551
98	9.00	1840	1942	1761	1617	1541

Note A = Paracetamol

B = Phenol

C = Methylparaben

D = Ethylparaben

E = Propylparaben

Table B9 The effect of solvent strength on retention time (t_R) and capacity factor (k') for each phenolic compound in standard mixtures at 20° C. The chromatographic conditions as given in Table 3.1

% (V/V) Water	Polarity Index (P _i)	Compound									
		A		B		C		D		E	
		t_R	k'	t_R	k'	t_R	k'	t_R	k'	t_R	k'
0	6.60	3.40	0.36	5.25	1.10	6.20	1.48	8.28	2.31	12.1	3.66
10	7.08	3.42	0.37	5.25	1.10	6.22	1.49	8.28	2.31	12.3	3.69
20	7.43	3.40	0.36	5.27	1.11	6.22	1.49	8.28	2.31	12.3	3.71
30	7.78	3.40	0.36	5.25	1.10	6.22	1.49	8.27	2.31	12.3	3.71
40	8.04	3.40	0.36	5.25	1.10	6.20	1.48	8.27	2.31	12.2	3.70
50	8.26	3.38	0.35	5.25	1.10	6.20	1.48	8.25	2.30	12.3	3.69
60	8.45	3.37	0.35	5.23	1.01	6.20	1.48	8.25	2.30	12.2	3.68
70	8.62	3.37	0.35	5.22	1.01	6.18	1.47	8.23	2.30	12.2	3.67
80	8.76	3.37	0.35	5.22	1.01	6.17	1.47	8.22	2.23	12.2	3.64
90	8.89	3.37	0.35	5.20	1.08	6.15	1.46	8.18	2.23	12.2	3.62
98	9.00	3.37	0.35	5.20	1.08	6.13	1.45	8.18	2.23	12.2	3.59

Note A = Paracetamol

B = Phenol

C = Methylparaben

D = Ethylparaben

E = Propylparaben

Table B10 The effect of solvent strength on retention time (t_R) and capacity factor (k') for each phenolic compound in standard mixtures at 25 °C. The chromatographic conditions as given in Table 3.1

% (V/V) Water	Polarity Index (P_i)	Compound									
		A		B		C		D		E	
		t_R	k'	t_R	k'	t_R	k'	t_R	k'	t_R	k'
0	6.60	3.37	0.35	5.08	1.03	5.87	1.35	7.68	2.07	11.1	3.87
10	7.08	3.37	0.35	5.08	1.03	5.87	1.35	7.68	2.07	11.1	3.90
20	7.43	3.37	0.35	5.08	1.03	5.85	1.34	7.67	2.07	11.2	3.91
30	7.78	3.37	0.35	5.08	1.03	5.85	1.34	7.67	2.07	11.1	3.89
40	8.04	3.35	0.34	5.08	1.03	5.85	1.34	7.67	2.07	11.1	3.90
50	8.26	3.35	0.34	5.07	1.03	5.85	1.34	7.67	2.07	11.1	3.89
60	8.45	3.35	0.34	5.07	1.03	5.85	1.34	7.67	2.07	11.1	3.90
70	8.62	3.33	0.33	5.07	1.03	5.83	1.33	7.65	2.06	11.1	3.89
80	8.76	3.33	0.33	5.05	1.02	5.82	1.33	7.65	2.06	11.1	3.88
90	8.89	3.33	0.33	5.03	1.01	5.80	1.32	7.62	2.05	11.1	3.87
98	9.00	3.33	0.33	5.03	1.01	5.80	1.32	7.60	2.04	11.0	3.87

Note A = Paracetamol

B = Phenol

C = Methylparaben

D = Ethylparaben

E = Propylparaben

Table B11 The effect of solvent strength on retention time (t_R) and capacity factor (k) for each phenolic compound in standard mixtures at 30 °C. The chromatographic conditions as given in Table 3.1

% (V/V) Water	Polarity Index (P_i)	Compound									
		A		B		C		D		E	
		t_R	k	t_R	k	t_R	k	t_R	k	t_R	k
0	6.60	3.37	0.23	5.13	0.88	6.05	1.22	7.97	1.92	11.7	3.27
10	7.08	3.38	0.24	5.13	0.88	6.08	1.23	8.02	1.94	11.7	3.30
20	7.43	3.37	0.23	5.13	0.88	6.07	1.22	8.02	1.94	11.8	3.31
30	7.78	3.37	0.23	5.13	0.88	6.08	1.23	8.03	1.94	11.8	3.31
40	8.04	3.37	0.23	5.12	0.88	6.07	1.22	8.02	1.94	11.8	3.30
50	8.26	3.37	0.23	5.12	0.88	6.07	1.22	8.00	1.93	11.7	3.30
60	8.45	3.35	0.23	5.10	0.87	6.03	1.21	7.98	1.92	11.7	3.29
70	8.62	3.33	0.22	5.08	0.86	6.03	1.21	7.97	1.92	11.7	3.28
80	8.76	3.33	0.22	5.08	0.86	6.00	1.20	7.90	1.89	11.6	3.25
90	8.89	3.33	0.22	5.07	0.86	5.97	1.19	7.88	1.89	11.6	3.23
98	9.00	3.33	0.22	5.07	0.86	5.93	1.17	7.83	1.87	11.5	3.20

Note A = Paracetamol

B = Phenol

C = Methylparaben

D = Ethylparaben

E = Propylparaben

Table B12 The effect of solvent strength on retention time (t_R) and capacity factor (k') for each phenolic compound in standard mixtures at 35 °C. The chromatographic conditions as given in Table 3.1

% (V/V) Water	Polarity Index (P_i)	Compound									
		A		B		C		D		E	
		t_R	k'	t_R	k'	t_R	k'	t_R	k'	t_R	k'
0	6.60	3.70	0.70	5.50	1.52	6.43	1.95	8.42	2.87	12.3	4.62
10	7.08	3.72	0.71	5.48	1.51	6.55	2.00	8.60	2.95	12.5	4.75
20	7.43	3.72	0.71	5.47	1.51	6.57	2.01	8.63	2.96	12.6	4.77
30	7.78	3.70	0.70	5.47	1.51	6.53	2.00	8.57	2.93	12.4	4.70
40	8.04	3.67	0.68	5.45	1.50	6.40	1.93	8.37	2.84	12.1	4.53
50	8.26	3.68	0.69	5.45	1.50	6.45	1.96	8.45	2.88	12.3	4.65
60	8.45	3.68	0.69	5.43	1.49	6.52	1.99	8.55	2.92	12.5	4.73
70	8.62	3.67	0.68	5.42	1.49	6.48	1.97	8.50	2.90	12.3	4.66
80	8.76	3.65	0.67	5.40	1.48	6.43	1.95	8.43	2.87	12.3	4.62
90	8.89	3.65	0.67	5.38	1.47	6.40	1.94	8.40	2.85	12.2	4.61
98	9.00	3.65	0.67	5.38	1.47	6.30	1.89	8.22	2.77	11.8	4.42

Note A = Paracetamol

B = Phenol

C = Methylparaben

D = Ethylparaben

E = Propylparaben

Table B13 The effect of solvent strength on retention time (t_R) and capacity factor (k') for each phenolic compound in standard mixtures at 20 °C. The chromatographic conditions as given in Table 3.2

% (V/V) Water	Polarity Index (P _i)	Compound									
		A		B		C		D		E	
		t_R	k'	t_R	k'	t_R	k'	t_R	k'	t_R	k'
0	6.60	3.30	0.43	4.83	1.10	5.60	1.43	7.50	2.26	11.3	3.66
10	7.08	3.30	0.43	4.83	1.10	5.60	1.43	7.50	2.26	11.3	3.76
20	7.43	3.30	0.43	4.83	1.10	5.58	1.43	7.48	2.25	11.2	3.78
30	7.78	3.30	0.43	4.83	1.10	5.60	1.43	7.48	2.25	11.3	3.72
40	8.04	3.28	0.43	4.82	1.10	5.58	1.43	7.48	2.25	11.3	3.58
50	8.26	3.27	0.42	4.80	1.09	5.57	1.42	7.47	2.25	11.2	3.68
60	8.45	3.28	0.43	4.82	1.10	5.57	1.42	7.47	2.25	11.2	3.75
70	8.62	3.27	0.42	4.80	1.09	5.57	1.42	7.47	2.25	11.2	3.69
80	8.76	3.27	0.42	4.80	1.09	5.55	1.41	7.47	2.25	11.2	3.66
90	8.89	3.27	0.42	4.78	1.08	5.53	1.40	7.45	2.24	11.2	3.64
98	9.00	3.27	0.42	4.78	1.08	5.53	1.40	7.43	2.23	11.2	3.49

Note A = Paracetamol

B = Phenol

C = Methylparaben

D = Ethylparaben

E = Propylparaben

Table B14 The effect of solvent strength on retention time (t_R) and capacity factor (k) for each phenolic compound in standard mixtures at 25 °C. The chromatographic conditions as given in Table 3.2

% (V/V) Water	Polarity Index (Pi)	Compound									
		A		B		C		D		E	
		t_R	k	t_R	k	t_R	k	t_R	k	t_R	k
0	6.60	3.27	0.24	4.68	0.78	5.33	1.03	7.03	1.67	10.4	3.90
10	7.08	3.27	0.24	4.68	0.78	5.33	1.03	7.03	1.67	10.4	3.89
20	7.43	3.25	0.24	4.68	0.78	5.33	1.03	7.03	1.67	10.3	3.88
30	7.78	3.25	0.24	4.68	0.78	5.32	1.02	7.03	1.67	10.4	3.89
40	8.04	3.23	0.23	4.68	0.78	5.32	1.02	7.03	1.67	10.3	3.89
50	8.26	3.23	0.23	4.67	0.78	5.32	1.02	7.02	1.67	10.3	3.88
60	8.45	3.23	0.23	4.67	0.78	5.30	1.02	7.00	1.66	10.3	3.86
70	8.62	3.22	0.22	4.65	0.77	5.30	1.02	6.98	1.65	10.3	3.87
80	8.76	3.22	0.22	4.63	0.77	5.28	1.01	6.98	1.65	10.3	3.86
90	8.89	3.22	0.22	4.63	0.77	5.27	1.00	6.95	1.64	10.3	3.86
98	9.00	3.22	0.22	4.63	0.76	5.25	1.00	6.95	1.64	10.2	3.84

Note A = Paracetamol

B = Phenol

C = Methylparaben

D = Ethylparaben

E = Propylparaben

Table B15 The effect of solvent strength on retention time (t_R) and capacity factor (k) for each phenolic compound in standard mixtures at 30 °C. The chromatographic conditions as given in Table 3.2

% (V/V) Water	Polarity Index (P)	Compound									
		A		B		C		D		E	
		t_R	k	t_R	k	t_R	k	t_R	k	t_R	k
0	6.60	3.30	0.63	4.82	1.39	5.55	1.75	7.45	2.69	11.2	4.53
10	7.08	3.30	0.63	4.82	1.39	5.55	1.75	7.42	2.67	11.1	4.51
20	7.43	3.30	0.63	4.82	1.39	5.53	1.74	7.42	2.67	11.1	4.48
30	7.78	3.30	0.63	4.80	1.38	5.53	1.74	7.40	2.66	11.1	4.50
40	8.04	3.28	0.62	4.80	1.38	5.53	1.74	7.40	2.66	11.1	1.49
50	8.26	3.27	0.62	4.78	1.37	5.52	1.74	7.37	2.65	11.1	4.47
60	8.45	3.25	0.61	4.77	1.36	5.48	1.72	7.35	2.63	11.0	4.45
70	8.62	3.23	0.60	4.75	1.35	5.47	1.71	7.30	2.61	10.9	4.41
80	8.76	3.23	0.60	4.73	1.34	5.43	1.69	7.27	2.60	10.9	4.39
90	8.89	3.23	0.60	4.72	1.34	5.42	1.68	7.25	2.59	10.8	4.36
98	9.00	3.23	0.60	4.72	1.34	5.42	1.68	7.23	2.58	10.8	4.36

Note A = Paracetamol

B = Phenol

C = Methylparaben

D = Ethylparaben

E = Propylparaben

Table B16 The effect of solvent strength on retention time (t_R) and capacity factor (k) for each phenolic compound in standard mixtures at 35 °C. The chromatographic conditions as given in Table 3.2

% (V/V) Water	Polarity Index (P _I)	Compound									
		A		B		C		D		E	
		t_R	k	t_R	k	t_R	k	t_R	k	t_R	k
0	6.60	3.32	0.66	4.83	1.42	5.57	1.79	7.43	2.72	11.1	4.56
10	7.08	3.32	0.66	4.85	1.43	5.57	1.79	7.47	2.74	11.2	4.59
20	7.43	3.32	0.66	4.83	1.42	5.55	1.78	7.42	2.71	11.1	4.54
30	7.78	3.30	0.65	4.82	1.41	5.52	1.76	7.37	2.69	11.0	4.51
40	8.04	3.20	0.65	4.80	1.40	5.52	1.76	7.35	2.68	11.0	1.50
50	8.26	3.28	0.64	4.78	1.39	5.50	1.75	7.33	2.67	11.0	4.48
60	8.45	3.27	0.64	4.77	1.39	5.48	1.74	7.30	2.65	10.9	4.46
70	8.62	3.23	0.62	4.75	1.38	5.45	1.73	7.27	2.64	10.9	4.44
80	8.76	3.23	0.62	4.75	1.38	5.43	1.72	7.23	2.62	10.9	4.43
90	8.89	3.23	0.62	4.72	1.36	5.42	1.71	7.22	2.61	10.8	4.41
98	9.00	3.23	0.62	4.72	1.36	5.42	1.71	7.22	2.61	10.8	4.39

Note A = Paracetamol

B = Phenol

C = Methylparaben

D = Ethylparaben

E = Propylparaben

Table B17 The effect of viscosity on the number of theoretical plates for each phenolic compound in RP-8 column at 25°C.

% (V/V) Water	Viscosity* (cP)	Number of theoretical plates (N)				
		Compound				
		A	B	C	D	E
0	0.57	1487	1856	1829	1783	1758
10	0.87	1840	2308	2157	2058	2018
20	1.14	2172	2593	2384	2234	2221
30	1.36	2452	2734	2546	2401	2392
40	1.53	2596	2793	2649	2508	2435
50	1.60	2605	2786	2639	2504	2427
60	1.62	2613	2783	2651	2493	2423
70	1.56	2601	2790	2650	2509	2433
80	1.40	2615	2785	2648	2493	2429
90	1.16	2613	2791	2651	2509	2421
98	0.88	2605	2783	2662	2512	2432

Note * from reference (1)

A = Paracetamol

B = Phenol

C = Methylparaben

D = Ethylparaben

E = Propylparaben

Table B18 The effect of viscosity on the number of theoretical plates for each phenolic compound in RP-8 column at 35°C.

% (V/V) Water	Viscosity* (cP)	Number of theoretical plates (N)				
		Compound				
		A	B	C	D	E
0	0.46	1561	1987	2198	1983	1853
10	0.69	1886	2338	2557	2403	2306
20	0.92	2262	2862	2843	2694	2584
30	1.07	2572	3259	2986	2905	2804
40	1.19	2654	3404	3095	2983	2887
50	1.25	2654	3392	3110	2992	2888
60	1.24	2661	3410	3105	2983	2881
70	1.18	2648	3410	3100	2986	2890
80	1.08	2655	3406	3102	2982	2887
90	0.92	2652	3410	3097	2981	2883
98	0.71	2660	3418	3100	2981	2887

Note * from reference (1)

A = Paracetamol

B = Phenol

C = Methylparaben

D = Ethylparaben

E = Propylparaben

Table B19 The effect of viscosity on the number of theoretical plates for each phenolic compound in RP-18 column at 25°C.

% (V/V) Water	Viscosity* (cP)	Number of theoretical plates (N)				
		Compound				
		A	B	C	D	E
0	0.57	938	1797	1856	1756	1613
10	0.87	1693	2171	2136	1973	1958
20	1.14	2349	2394	2213	2105	2051
30	1.36	2691	2492	2313	2189	2117
40	1.53	2787	2541	2342	2207	2153
50	1.60	2793	2549	2339	2214	2146
60	1.62	2790	2544	2336	2206	2148
70	1.56	2795	2553	2353	2201	2158
80	1.40	2792	2548	2333	2208	2145
90	1.16	2801	2558	2314	2203	2155
98	0.88	2825	2543	2333	2211	2153

Note * from reference (1)

A = Paracetamol

B = Phenol

C = Methylparaben

D = Ethylparaben

E = Propylparaben

Table B20 The effect of viscosity on the number of theoretical plates for each phenolic compound in RP-18 column at 35°C.

% (V/V) Water	Viscosity* (cP)	Number of theoretical plates (N)				
		Compound				
		A	B	C	D	E
0	0.46	704	1010	1194	1168	1168
10	0.69	1088	1423	1452	1354	1292
20	0.92	1341	1655	1607	1463	1410
30	1.07	1643	1810	1713	1557	1502
40	1.19	1867	1961	1768	1610	1542
50	1.25	1852	1959	1757	1614	1546
60	1.24	1862	1950	1755	1614	1546
70	1.18	1874	1974	1770	1618	1542
80	1.08	1852	1935	1753	1625	1546
90	0.92	1850	1952	1753	1612	1551
98	0.71	1840	1942	1761	1617	1541

Note * from reference (1)

A = Paracetamol

B = Phenol

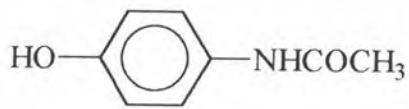
C = Methylparaben

D = Ethylparaben

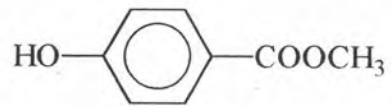
E = Propylparaben

APPENDIX C

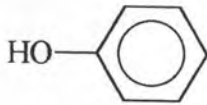
The Chemical Structure of Phenolic Compounds



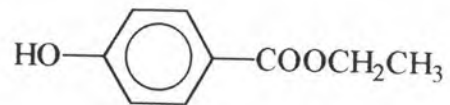
Paracetamol



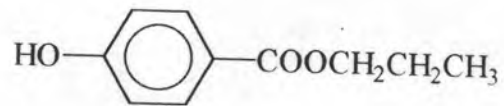
Methylparaben



Phenol



Ethylparaben



Propylparaben

VITA

Mr. Somsak Sirichai was born on October 5 , 1970 in Yala , Thailand. He graduated with a Bachelor Degree of Science in Chemistry from Prince of Songkhla University in 1993. In the same year , he was admitted into a Master Degree Program in Chemistry Department , Chulalongkorn University , Bangkok.

