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APPENDIX

Table A-1: The chromatographic conditions of the study of effect of mobile phase pH adjusted with hydrochloric acid and sodium hydroxide solution

Parameter	Conditions
Analytical Column	Hypersil column, 250 x 4.6 mm. I.D., 5 μm
Mobile Phase	The mixture methanol-water (30:70% v/v) containing 0.0050M TBABr and 0.0050 % v/v 2-mercaptoethanol adjusting mobile phase pH with 0.2M HCl and 0.2M NaOH.
Flow Rate	1.00 mL/min
Injection Volume	10 μL
Detector	Photodiode Array Detector
Data Acquisition	Maximum plot (200-400 nm)

Table A-2: The results of the effect of mobile phase pH adjusted with hydrochloric acid and sodium hydroxide solution on the chromatographic parameters for the separation of mercury compounds. (Triplicate analyses)

pH	compound	t_R (min)	W (min)	k'	α*	R_s**
2.0	solvent	2.924±0.012	-	-	1.209	1.327
	Hg^{2+}	5.419±0.055	0.367±0.088	0.853		
	$MeHg^+$	5.938±0.068	0.416±0.007	1.031		
	$PhHg^+$	35.125±0.345	0.658±0.035	11.022		
3.0	solvent	2.921±0.004	-	-	1.118	1.081
	Hg^{2+}	5.226±0.022	0.472±0.051	0.789		
	$MeHg^+$	5.682±0.013	0.372±0.094	0.945		
	$PhHg^+$	31.092±0.154	0.833±0.165	9.644		
4.0	solvent	2.919±0.010	-	-	1.210	1.172
	Hg^{2+}	5.102±0.054	0.400±0.088	0.747		
	$MeHg^+$	5.558±0.045	0.378±0.111	0.904		
	$PhHg^+$	29.97±0.616	0.825±0.035	8.968		
5.0	solvent	2.929±0.004	-	-	1.170	0.940
	Hg^{2+}	5.251±0.035	0.417±0.045	0.793		
	$MeHg^+$	5.646±0.029	0.422±0.038	0.928		
	$PhHg^+$	30.841±0.271	0.711±0.150	9.529		
6.0	solvent	2.921±0.008	-	-	1.146	0.940
	Hg^{2+}	5.277±0.016	0.383±0.029	0.806		
	$MeHg^+$	5.621±0.019	0.350±0.028	0.924		
	$PhHg^+$	29.877±0.969	0.784±0.071	9.228		
7.0	solvent	3.072±0.258	-	-	1.117	0.672
	Hg^{2+}	5.233±0.075	0.317±0.058	0.703		
	$MeHg^+$	5.483±0.064	0.428±0.009	0.785		
	$PhHg^+$	27.355±0.024	1.074±0.129	7.905		
8.1	solvent	2.927±0.045	-	-	1.178	0.964
	Hg^{2+}	5.314±0.052	0.467±0.100	0.815		
	$MeHg^+$	5.737±0.034	0.411±0.010	0.960		
	$PhHg^+$	31.831±0.512	0.783±0.099	9.875		

* selectivity factor between inorganic and methylmercury

** peak resolution between inorganic and methylmercury

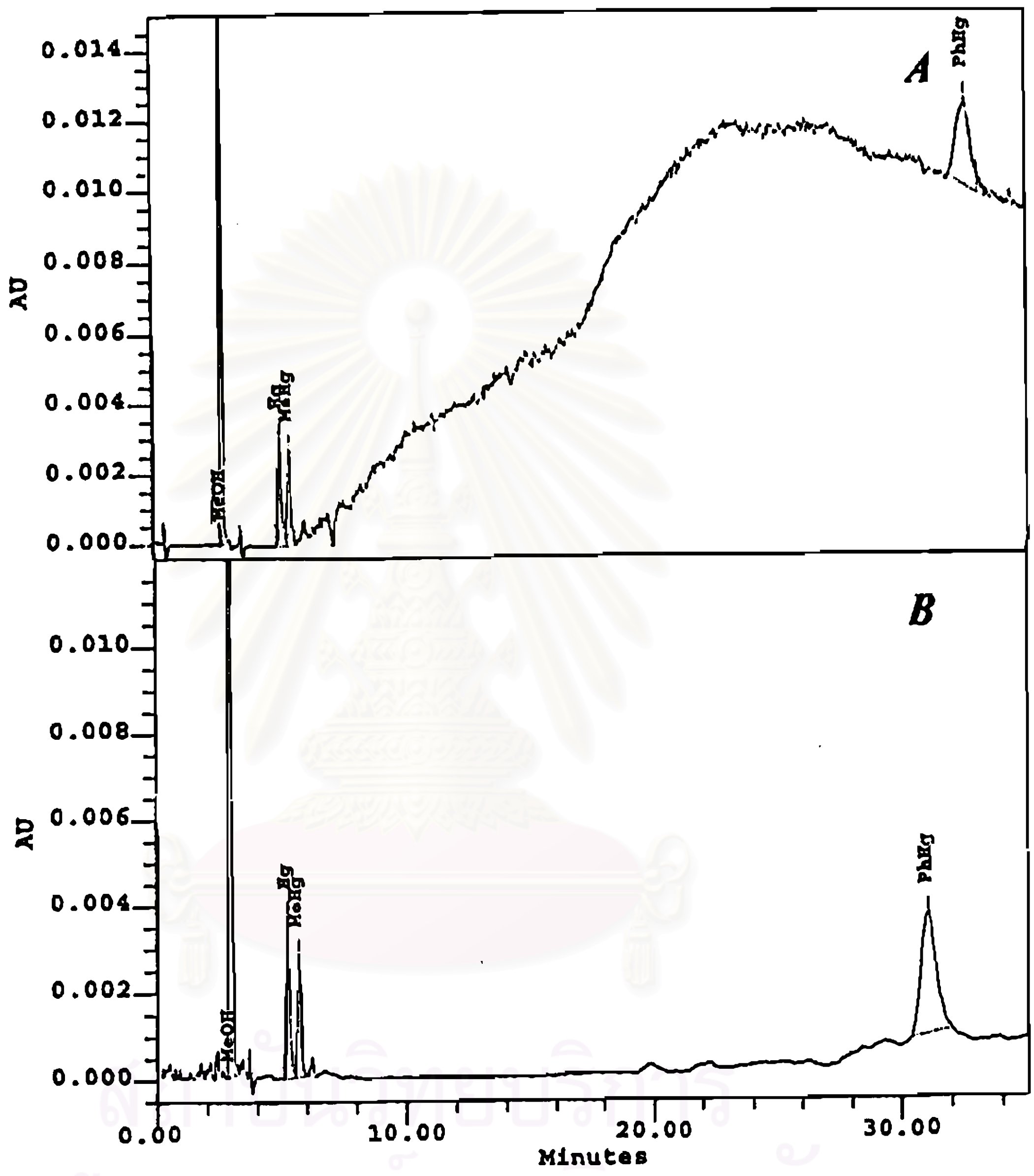

Figure A-1: The chromatograms of mercury compounds at variety of mobile phase pH adjusted with hydrochloric acid and sodium hydroxide solution (chromatographic conditions are shown in Table A-1).

A) pH 2.0 B) pH 3.0 C) pH 4.0 D) pH 5.0

E) pH 6.0 F) pH 7.0 G) pH 8.1

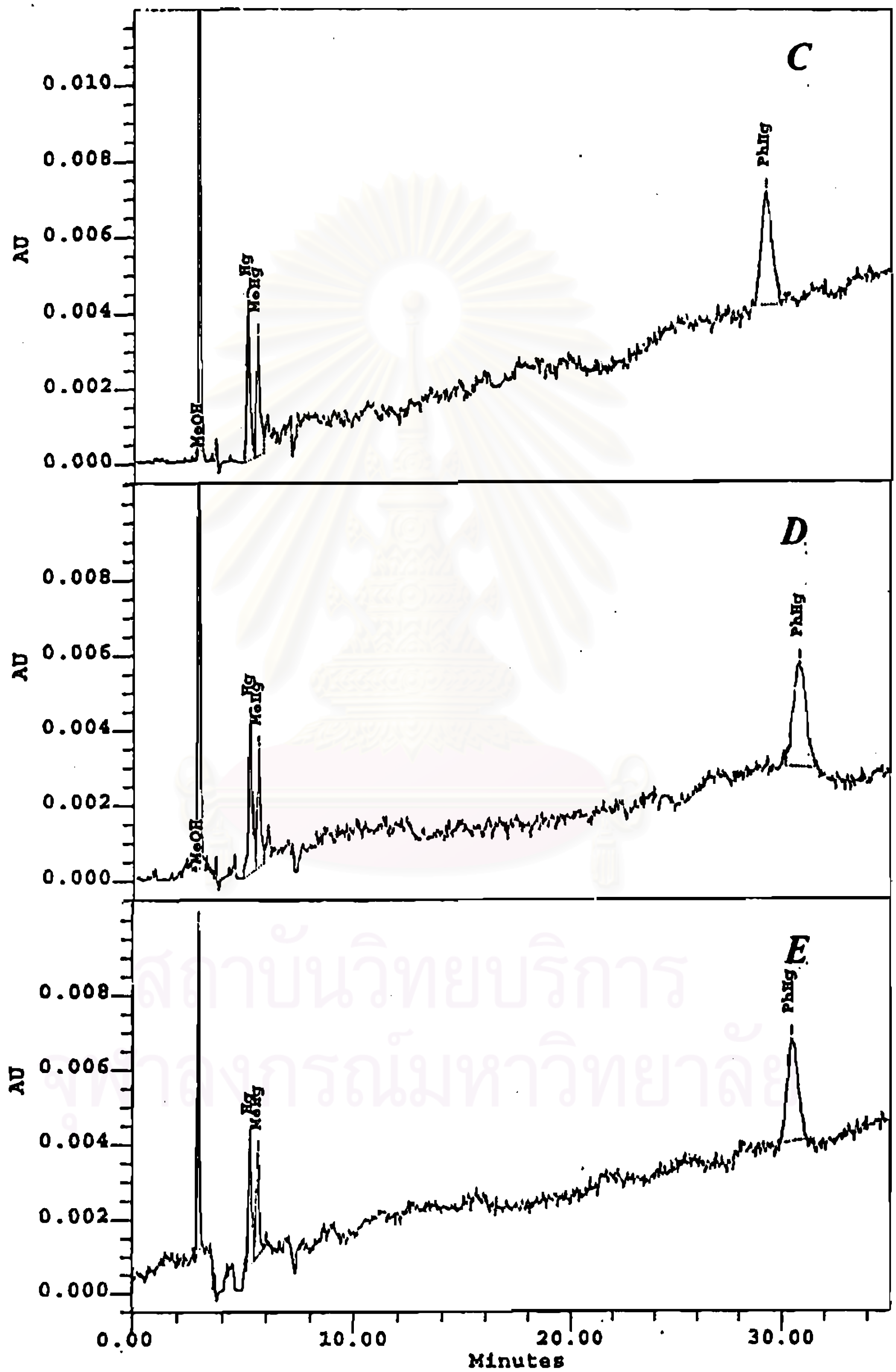

Figure A-1 (continue)

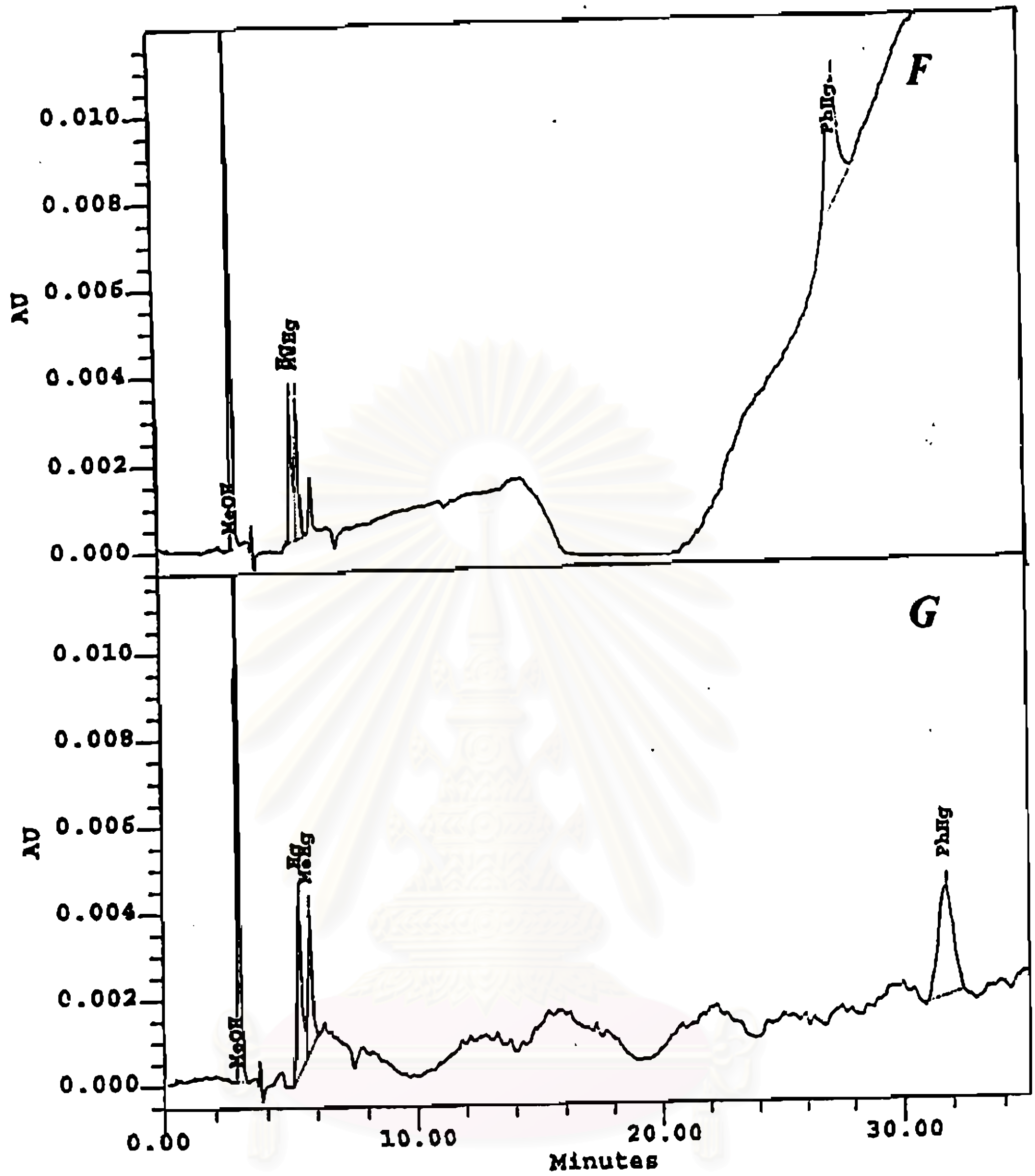

Figure A-1 (continue)

Table A-3: The chromatographic conditions of the study of effect of mobile phase pH adjusted with acetic acid-acetate buffer solution.

Parameter	Conditions
Analytical Column	Hypersil column, 250 x 4.6 mm. I.D., 5 µm
Mobile Phase	The mixture methanol-water (30:70% v/v) buffered with 1.00 x 10^{-3}M AcONa-AcOH containing 0.0050M TBABr and 0.0050 % v/v 2-mercaptoethanol.
Flow Rate	1.00 mL/min
Injection Volume	10 µL
Detector	Photodiode Array Detector
Data Acquisition	Maximum plot (200-400 nm)

Table A-4: The results of the effect of mobile phase pH adjusted with acetic acid-acetate buffer solution on the chromatographic parameters for the separation of mercury compounds. (Triplicate analyses)

pH	compound	t_R (min)	W (min)	k'	α*	R_S**
3.00	solvent	2.922±0.007	-	-		
	Hg^{2+}	5.221±0.019	0.395±0.092	0.742	1.202	1.254
	$MeHg^+$	5.670±0.009	0.322±0.092	0.892		
	$PhHg^+$	31.228±0.237	1.750±0.424	9.440		
3.50	solvent	2.932±0.005	-	-		
	Hg^{2+}	5.448±0.025	0.578±0.130	0.858	1.177	0.836
	$MeHg^+$	5.893±0.006	0.487±0.178	1.010		
	$PhHg^+$	34.120±0.666	0.850±0.117	10.637		
4.00	solvent	2.925±0.004	-	-		
	Hg^{2+}	5.363±0.012	0.424±0.012	0.834	1.191	1.182
	$MeHg^+$	5.830±0.026	0.367±0.076	0.993		
	$PhHg^+$	32.436±1.596	0.675±0.082	10.058		
5.00	solvent	2.924±0.002	-	-		
	Hg^{2+}	5.391±0.030	0.372±0.054	0.844	1.178	1.060
	$MeHg^+$	5.830±0.012	0.456±0.079	0.994		
	$PhHg^+$	33.702±0.380	0.866±0.189	10.526		

* selectivity factor between inorganic and methylmercury
** peak resolution between inorganic and methylmercury

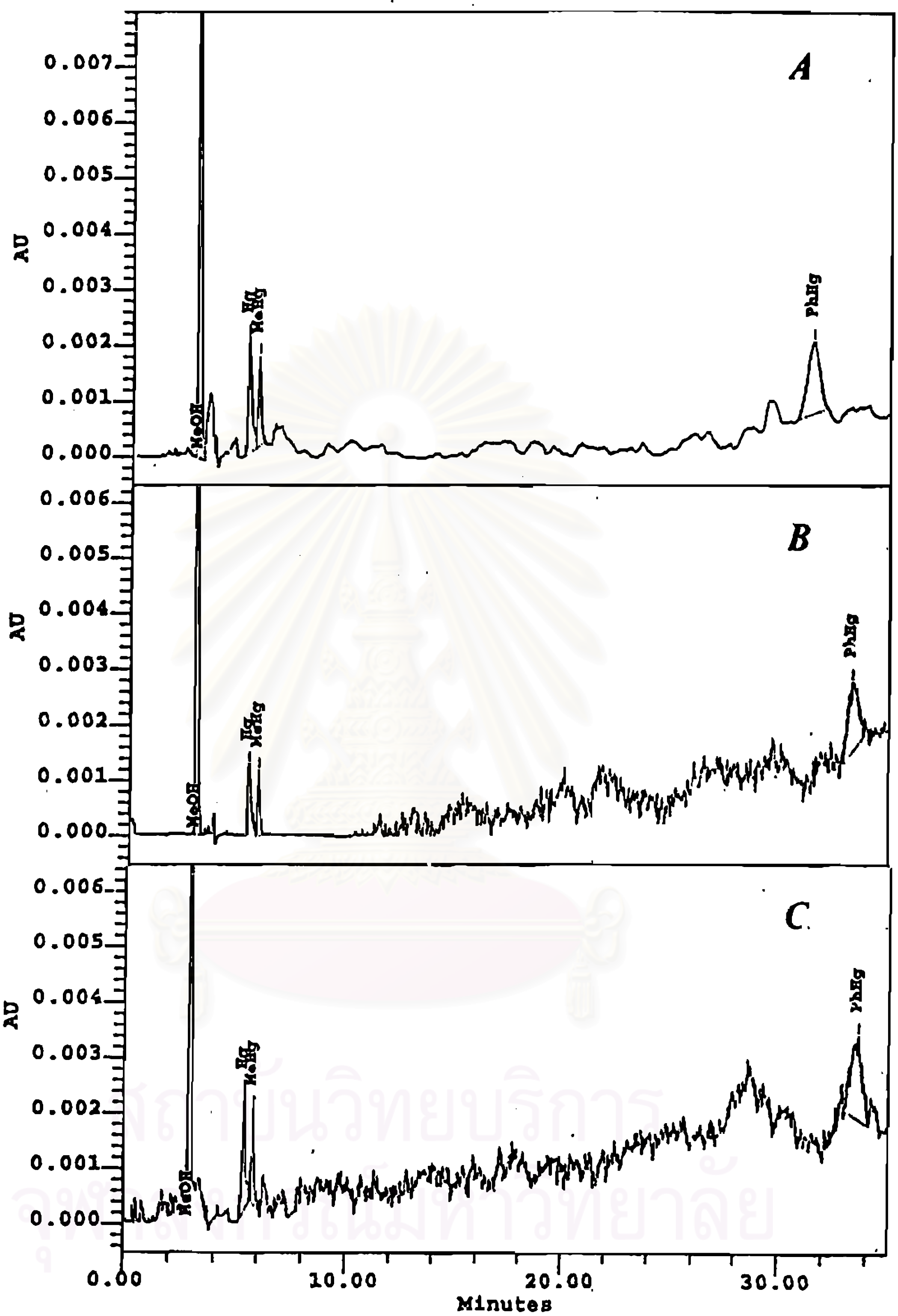

Figure A-2: The chromatograms of mercury compounds at variety of mobile phase pH with acetate-acetic acid buffered solution (chromatographic conditions are shown in Table A-3)

A) pH 3.00 B) pH 4.00 C) pH 5.00

Table A-5: The chromatographic conditions of the study of effect of 2-mercaptoethanol concentration

Parameter	Conditions
Analytical Column	Hypersil column, 250 x 4.6 mm. I.D., 5 µm
Mobile Phase	The mixture methanol-water (30:70% v/v) buffered with 1.00×10^{-3}M AcONa-AcOH pH 3.00 containing 0.0050M TBABr and 2-mercaptoethanol.
Flow Rate	1.00 mL/min
Injection Volume	10 µL
Detector	Photodiode Array Detector
Data Acquisition	Maximum plot (200-400 nm)

Table A-6: The results of the effect of 2-mercaptoethanol concentration on the chromatographic for the separation of mercury compounds. (Triplicate analyses)

%mercapto ethanol	compound	t_R (min)	W (min)	k'	α*	R_s**
0.0010%	solvent	2.908±0.007	-	-		
	Hg^{2+}	5.321±0.012	0.462±0.016	0.830	1.180	0.986
	$MeHg^{+}$	5.754±0.003	0.417±0.034	0.979		
	$PhHg^{+}$	32.408±0.103	1.826±0.228	10.144		
0.0020%	solvent	2.909±0.008	-	-		
	Hg^{2+}	5.393±0.008	0.417±0.017	0.854	1.165	1.007
	$MeHg^{+}$	5.804±0.014	0.400±0.017	0.995		
	$PhHg^{+}$	33.704±0.202	1.744±0.289	10.586		
0.0040%	solvent	2.909±0.003	-	-		
	Hg^{2+}	5.215±0.091	0.483±0.076	0.793	1.192	1.032
	$MeHg^{+}$	5.659±0.066	0.378±0.019	0.945		
	$PhHg^{+}$	30.924±0.023	1.108±0.106	9.630		
0.0050%	solvent	2.913±0.002	-	-		
	Hg^{2+}	5.258±0.008	0.456±0.034	0.805	1.188	1.048
	$MeHg^{+}$	5.697±0.002	0.383±0.034	0.956		
	$PhHg^{+}$	31.658±0.129	1.472±0.298	9.868		
0.0060%	solvent	2.907±0.007	-	-		
	Hg^{2+}	5.201±0.099	0.450±0.047	0.789	1.187	1.009
	$MeHg^{+}$	5.630±0.670	0.400±0.117	0.937		
	$PhHg^{+}$	30.404±0.126	1.300±0.322	9.459		
0.0075%	solvent	2.908±0.014	-	-		
	Hg^{2+}	5.319±0.121	0.350±0.104	0.829	1.170	1.114
	$MeHg^{+}$	5.730±0.068	0.590±0.025	0.970		
	$PhHg^{+}$	31.985±2.718	1.175±0.154	9.998		

* selectivity factor between inorganic and methylmercury

** peak resolution between inorganic and methylmercury

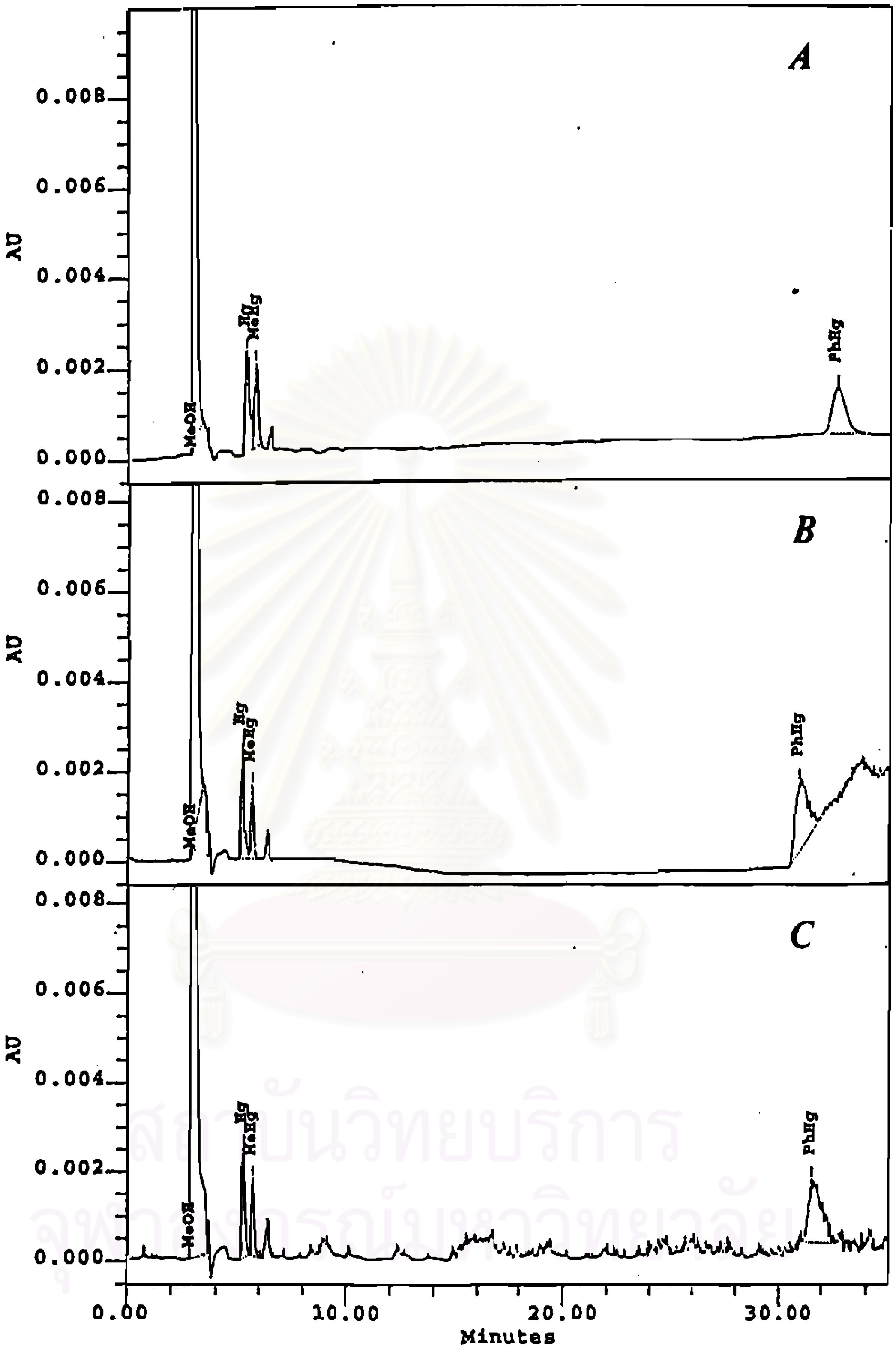

Figure A-3: The chromatograms of mercury compounds at variety of 2-mercaptoethanol concentration (chromatographic conditions are shown in Table A-5)

A) 0.0010% B) 0.0040% C) 0.0050% D) 0.0060%

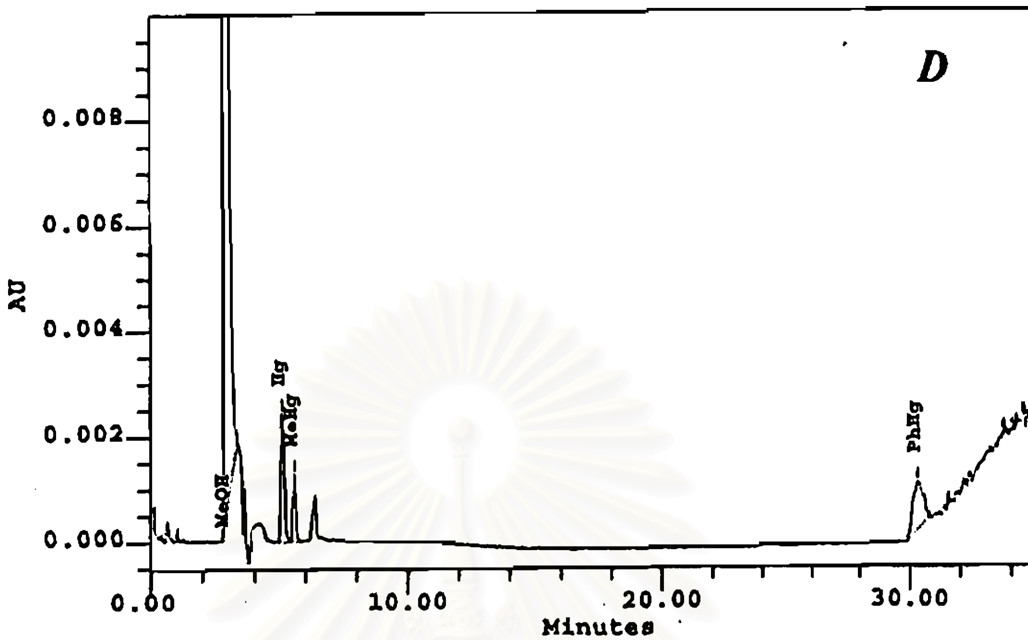

Figure A-3 (continue)

Table A-7: The chromatographic conditions of the study of effect of tetrabutylammonium bromide concentration

Parameter	Conditions
Analytical Column	Hypersil column, 250 x 4.6 mm. I.D., 5 µm
Mobile Phase	The mixture methanol-water (30:70% v/v) buffered with 1.00 x 10^{-3}M AcONa-AcOH pH 3.00 containing 0.0050 % v/v 2-mercaptoethanol and TBABr.
Flow Rate	1.00 mL/min
Injection Volume	10 µL
Detector	Photodiode Array Detector
Data Acquisition	Maximum plot (200-400 nm)

Table A-8 : The results of the effect of tetrabutylammonium bromide concentration on the chromatographic parameters for the separation of mercury compounds. (Triplicate analyses)

TBABr concentration	compound	t_R (min)	W (min)	k'	α*	R_s**
0.0000M	solvent	2.909±0.004	-	-	1.269	1.363
	Hg^{2+}	5.115±0.129	0.428±0.098	0.758		
	$MeHg^+$	5.708±0.121	0.442±0.083	0.962		
	$PhHg^+$	31.775±0.116	1.729±0.136	9.923		
0.0010M	solvent	2.914±0.004	-	-	1.220	1.073
	Hg^{2+}	5.196±0.004	0.525±0.011	0.783		
	$MeHg^+$	5.696±0.005	0.408±0.083	0.955		
	$PhHg^+$	30.821±0.310	1.283±0.235	9.577		
0.0025M	solvent	2.913±0.004	-	-	1.213	1.154
	Hg^{2+}	5.225±0.037	0.517±0.050	0.794		
	$MeHg^+$	5.719±0.042	0.399±0.038	0.963		
	$PhHg^+$	31.480±0.108	1.055±0.233	9.807		
0.0050M	solvent	2.913±0.002	-	-	1.188	1.048
	Hg^{2+}	5.258±0.008	0.456±0.034	0.805		
	$MeHg^+$	5.697±0.002	0.383±0.034	0.956		
	$PhHg^+$	31.658±0.129	1.472±0.298	9.868		
0.0075M	solvent	2.904±0.005	-	-	1.191	1.163
	Hg^{2+}	5.143±0.060	0.394±0.098	0.771		
	$MeHg^+$	5.571±0.044	0.329±0.025	0.918		
	$PhHg^+$	29.838±0.495	1.287±0.159	9.275		
0.0100M	solvent	2.901±0.001	-	-	1.149	0.890
	Hg^{2+}	5.290±0.085	0.405±0.009	0.823		
	$MeHg^+$	5.646±0.060	0.395±0.149	0.946		
	$PhHg^+$	31.557±0.237	1.433±0.189	9.878		
0.0150M	solvent	2.921±0.001	-	-	1.166	1.099
	Hg^{2+}	5.338±0.022	0.317±0.141	0.827		
	$MeHg^+$	5.738±0.025	0.411±0.114	0.964		
	$PhHg^+$	36.362±1.096	1.241±0.012	11.448		

* selectivity factor between inorganic and methylmercury

** peak resolution between inorganic and methylmercury

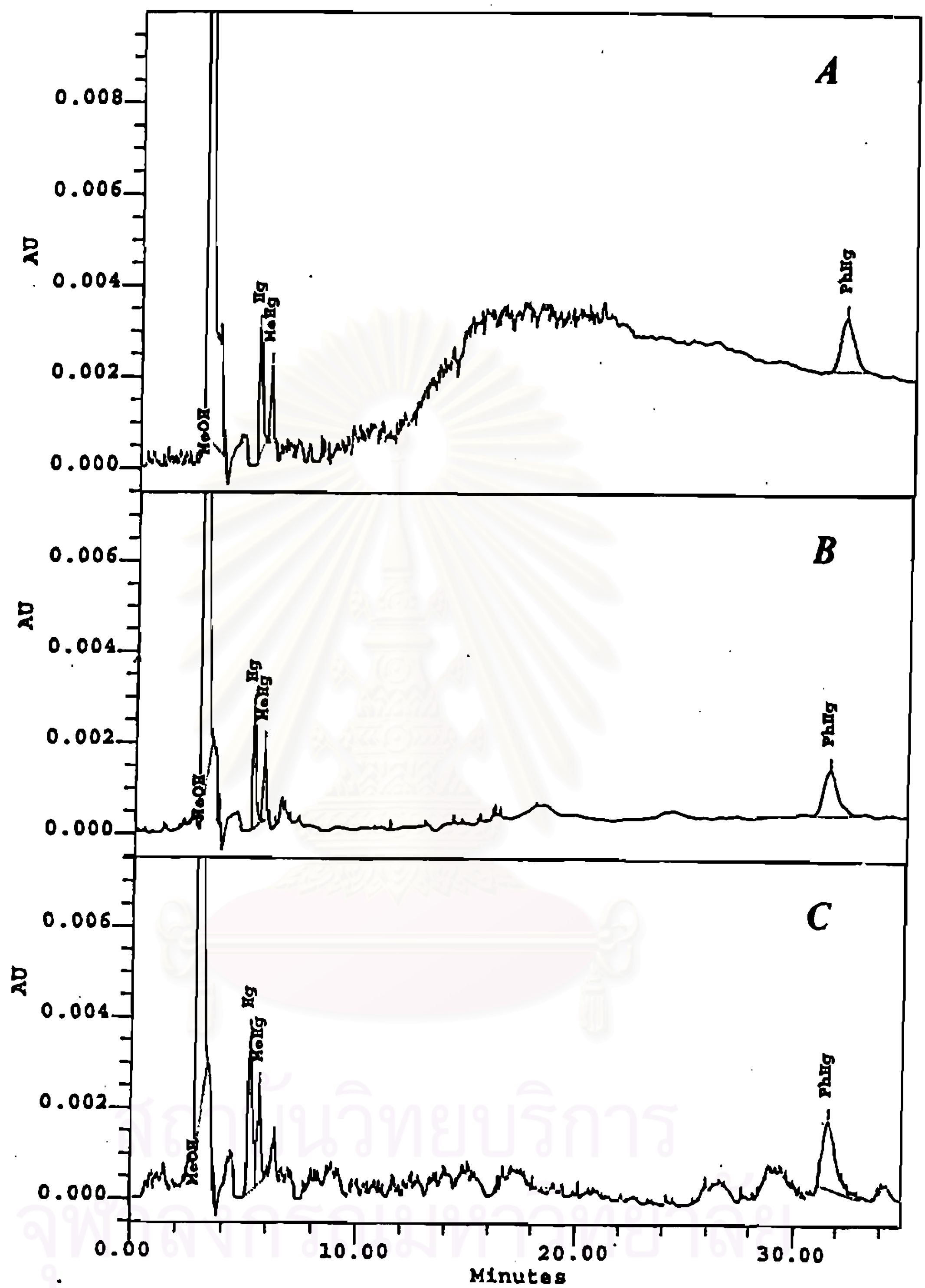

Figure A-4: The chromatograms of mercury compounds at variety of tetrabutylammonium bromide concentration (chromatographic conditions are shown in Table A-7)

A) 0.0000M B) 0.0025M C) 0.0050M

B) 0.0075M E) 0.0100M

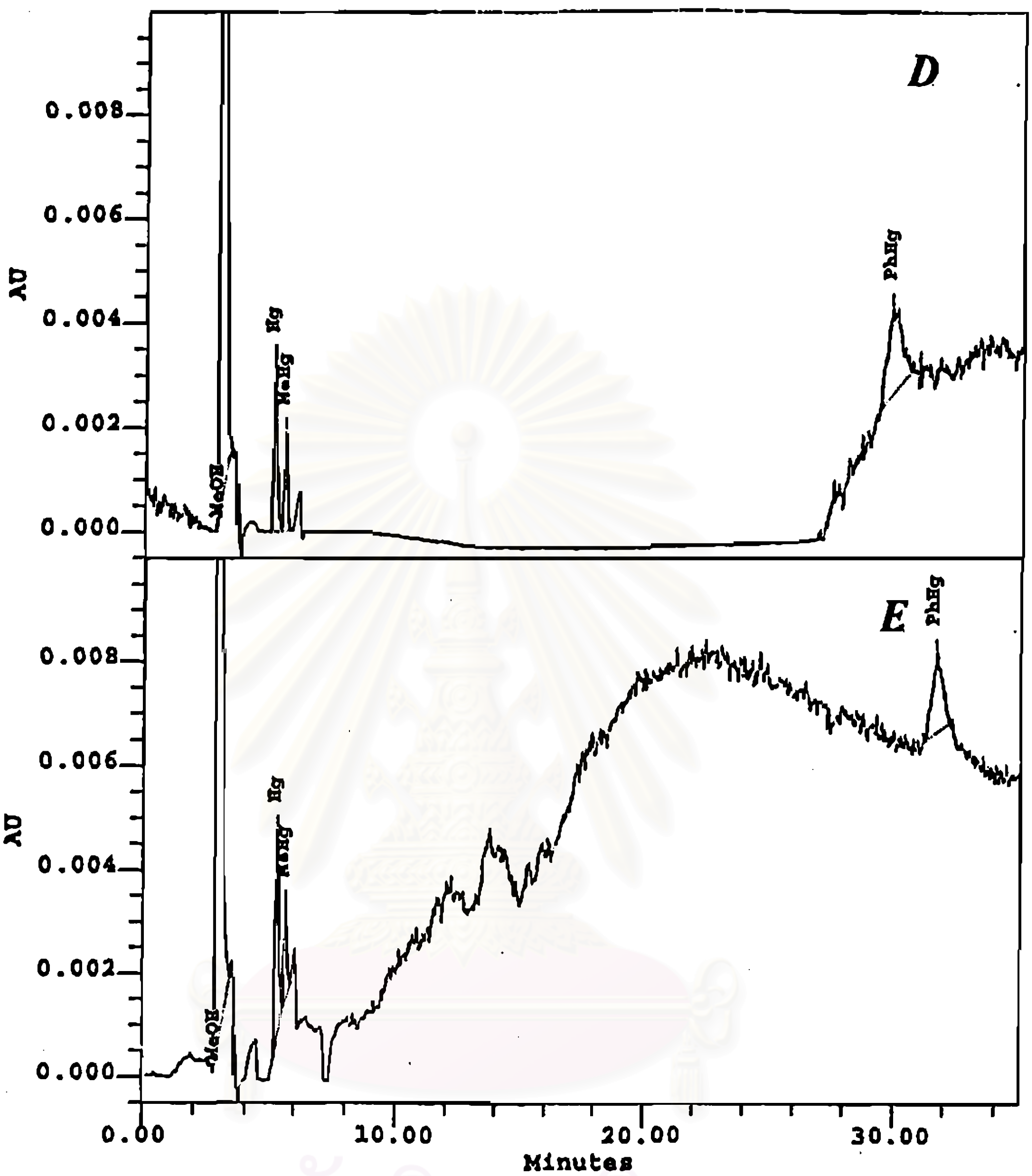

Figure A-4 (continue)

VITA

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