ELECTROPHORESIS

Supporting Information for Electrophoresis

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Optimization of capillary zone electrophoresis for analysis of phytochemical bioactive compounds

Supplementary Table 1. Extraction methods for CZE analysis of phytochemical bioactive compounds

Extraction method	Analytes	Matrix	Operating procedures	Ref.
Ultrasonic extraction	anthraquinones	*Paedicalyx attopevensis*	1. Extraction with ethanol for three times (1 h each); 2. Pool the extracts and evaporate the solvent; 3. Dissolution of the residues with ethanol-dimethylsulphoxide (4:1, v/v); 4. Filtration before analysis.	[52]
	ferulic acid	*Angelica sinensis* *Ligusticum chuanxiong*	1. Extraction with 70% ethanol for 30 min twice; 2. Centrifugation and pool the supernatant; 3. Dilution with 70% aqueous ethanol.	[47]
	salidroside, *p*-tyrosol	*Rhodiola Crenulata* *Rhodiola kirilowii*	1. Extraction with methanol for three times (1 h each); 2. Pool the extracts and evaporate the solvent; 3. Dissolution of the residues with methanol; 4. Filtration before analysis.	[48]
	matrine, sophocarpine, sophoridine, oxymatrine, oxysophocarpine	*Sophora flavescens* *Sophora viciifolia*	1. Extraction with 70% methanol for 30 min twice after immersion in methanol overnight; 2. Pool the extracts; 3. Filtration and dilution before analysis.	[46]
	icariin, epimedin A, B, C	*Epimedium sagittatum* *Epimedium pubescens* *Epimedium wushanense*	1. Extraction with buffer for 30 min; 2. Centrifugation; 3. Filtration of the supernatant before analysis.	[49]
	adenosine, uridine, guanosine, inosine	*Cordyceps sinensis*	1. Extraction with water for 20 min; 2. Centrifugation.	[51]
	cordycepin, adenosine	*Cordyceps kyushuensis*	1. Extraction with water for 20 min; 2. Centrifugation; 3. Filtration of the supernatant before analysis.	[56]
	ecdysone, phenylpropanoid glucoside, flavonoids	*Lamium maculatum*	1. Extraction with methanol for three times (1 h each); 2. Pool the extracts and concentration; 3. Filtration before analysis.	[54]
	flavonoids	*Flos Lonicerae*	1. Extraction with 70% acetonitrile for three times (30 min each); 2. Pool the extracts and dilution with water; 3. SPE before analysis.	[50]
	eukovoside, cinnamic acid, ferulic acid	*Euphrasia regelii*	1. Extraction with methanol for three times (1 h each); 2. Pool the extracts and evaporate the solvent; 3. Dissolution of the residues with methanol; 4. Filtration before analysis.	[55]
	coumarins	*Cacalia tangutica*	1. Extraction with methanol for three times; 2. Concentration under reduced pressure; 3. Clean-up with column separation before analysis.	[58]
	aristolochic acid I, II	*Aristolochia fangchi* *Caulis Aristolochiae Manshuriensis*	1. Extraction with methanol for 30 min twice; 2. Pool the extracts; 3. Filtration before analysis.	[53]

	Stephania tetrandra		
phenolic compounds	*Olea europaea*	1. Extraction for three times (10 min each); 2. Pool the extracts and evaporate the solvent; 3. Dissolution of the residue with 1:1 methanol/water (v/v); 4. Filtration before analysis.	[57]
hyperoside, isoquercitrin, quercitrin, quercetin, rutin	*Hypericum perforatum* *Sambucus nigra* *Crataegus*	1. Extraction for 30 min; 2. Filtration and dilution with water.	[80, 81]
caffeic acid, cinnamic acid, chlorogenic acid, ferulic acid, quercetin, rutin			
saikosaponins a, c, d	*Bupleurum chinese*	1. Extraction with ethanol for three times (1 h each); 2. Pool the extracts and evaporate the solvent; 3. Filtration before analysis.	[86]
atropine, scopolamine	*Datura metel*	1. Extraction with methanol for three times (30 min each); 2. Centrifugation for 10 min.	[87]
noradrenaline, dopamine	*Portulaca oleracea*	1. Extraction with water or 50% methanol for 2 h; 2. Filtration before analysis.	[88]
carnosic acid, carnosol	*Rosmarinus officialis*	1. Extraction with methanol for 15 min; 2. Centrifugation.	[90]
icariin	*Herba epimedii*	1. Extraction with 70% ethanol for 30 min twice; 2. Pool the extracts.	[101]
berberine, hydrastine	*Hydrastis canadensis*	1. Extraction with 70% methanol for 60 min; 2. Filtration before analysis.	[104]
sucrose, glucose, fructose	*Astragalus membranceus* *Angelica sinensis* *Codonopsis pilosula*	1. Immersion in methanol for 15 h; 2. Extraction for 30 min; 3. Filtration and dilution with de-ionized water before analysis.	[132]
cordycepin, adenosine	*Cordyceps kyushuensis* *Cordyceps militaris*	1. Extraction with de-ionized water for 20 min; 2. Centrifugation; 3. Dilution of the supernatant with de-ionized water; 4. Filtration before analysis.	[133]
glycyrrhizin	*Glycyrrhiza uralensis*	1. Extraction with 70% ethanol for 30 min twice; 2. Centrifugation; 3. Pool the extracts and dilution with 70% ethanol.	[137]
adenine, uracil, adenosine, guanosine, uridine, inosine	*Cordyceps sinensis*	1. Extraction with buffer for 15 min; 2. Centrifugation for 30 min; 3. Filtration before analysis.	[144]
atropine,	*Flos daturae*	1. Extraction with 80% ethanol for 30 min twice;	[177

	scopolamine		2. Pool the extracts; 3. Filtration before analysis.	]
Soxhlet extraction	flavonoids	*Hippophae rhamnoides*	1. Extraction with methanol for 1 h; 2. Filtration before analysis.	[39, 42]
	paeonol, oxypaeoniflorin, pentagalloylglucose, benzoic acid, gallic acid	*Paeonia veitchii* *P. lactiflora*	1. Extraction with 50% ethanol for three times (15 min each); 2. Centrifugation and pool the supernatants; 3. Addition of internal standard solution; 4. Filtration before analysis.	[40]
	hydroxysafflor yellow A, safflor yellow A, safflamin C, A	*Carthamus tinctorius*	1. Extraction with methanol for 2 h; 2. Filtration before analysis.	[43]
	emodin, chrysophanol, rhein, aloe-emodin, sennoside A, B	*Rheum palmatum* *Rheum tanguticum*	1. Extraction with methanol for 10 h; 2. Centrifugation; 3. Filtration before analysis.	[44]
	aloin, aloe-emodin	*Aloe vera L.* var. *chinensis*	1. Extraction with 30% ethanol and water for 2.5 h, respectively.	[41]
	phenylpropanoid glycosides	*Pedicularis longiflora* var tubiformis *Pedicularis longiflora* *Pedicularis Kansuensis*	1. Extraction with methanol for four times (1.5 h each); 2. Pool the extracts and evaporate the solvent; 3. Dissolution of the residue with methanol.	[45]
	adenosine, guanosine, uridine	*Cordyceps sinensis*	1. Extraction with ethanol for 6 h; 2. Remove ethanol; 3. Vortex the residue for 5 min with sample buffer 4. Centrifugation and pool the supernatants; 5. Filtration before analysis.	[68]
	emodin, chrysophanol, emodin-8-β-Dglucoside, chrysophanol-8-β-D-glucosid	*Rumex japonicus* *Cassia tora* *Rhamnus purshiana* *Polygonum multiflorum* *P. cuspidatum*	1. Extraction with methanol for 10 h; 2. Concentration and dissolution of the residue with methanol; 3. Centrifugation; 4. Dilution with borate buffer (pH 10.5).	[109]
Reflux extraction	strychnine, brucine	*Strychnos nux-vomica*	1. Refluxed for 60 min after wetted with ammonium hydroxide for 5 min; 2. Soak with chloroform for 30 min; 3. Dry in vacuum; 4. Dissolution the residue with methanol; 5. Filtration and dilution with methanol.	[36]
	flavone-*O*-glycosides flavone-*C*-glycosides	*Achillea setacea*	1. Extraction with 40:60 methanol/water (v/v) for 30 min twice; 2. Pool the extract and evaporate the solvent; 3. Dissolution of the residue with methanol/water (80:20, v/v); 4. Filtration before analysis.	[37]
	flavone-*C*-glycosides flavone-*O*-glycosides	*Passiflora incarnata*	1. Extraction with methanol for 30 min; 2. Pool the extracts and filtration; 3. Concentration under vacuum; 4. Dissolution of the residue in methanol;	[38]

			5. Filtration before analysis.	
	quercetin, rutin, quercitrin, kaempferol, catechin, gallic acid	*Morus alba*	1. Extraction with 1.5 M hydrochloric acid and methanol for 2 h; 2. Filtration and dilution with 80% methanol.	[35]
Stirring	fucose, glucose, arabinose, rhamnose, galactose, xylose	*Ligustrum lucidum* *Angelica sinensis*	1. Remove pigments using reflux with acetone and 1:1 ethanol-ether, respectively for 2 h; 2. Extraction with water at 90-100 °C for three times (6 h each); 3. Concentration and precipitate with absolute ethanol; 4. Centrifugation and dialysis of the precipitate; 5. Remove proteins with 4:1 chloroform-isopentanol; 6. Freeze dry; 7. Hydrolysis with 2 M sulfuric acid for 10 h (*Ligustrum lucidum*) or 2 M sulfuric acid and 5M hydrochloric acid (*Angelica sinensis*) for 2.5 h; 8. Filtration and dilution.	[62, 63]
	glycyrrhizin, 18α-glycyrrhetic acid, 18β-glycyrrhetic acid	*Glycyrrhiza glabra*	1. Extraction with methanol/water (1:1, v/v) at 60 °C for 25 min; 2. Centrifugation; 3. Filtration for analysis of glycyrrhizin; 4. Evaporation under vacuum at 60 °C and dissolution of the residue; 5. SPE; 6. Concentration of the methanol eluent; 7. Filtration before analysis of two other analytes.	[64]
	curcumin	*Curcuma longa*	1. Extraction with petroleum for 20 h; 2. Filtration and SPE.	[162]
	protocatechuic aldehyde, protocatechuic acid	*Salivia miltorrhrza*	1. Extraction with 70% ethanol for 72 h; 2. Filtration and dilution with buffer.	[163]
Shaking	thebaine, codeine, morphine, papavarine, narcotine	*Papaver somniferum*	1. Extraction with 2.5% v/v acetic acid for three times (30 min each); 2. Centrifugation at 5000 rpm; 3. Filtration and adjusting the volume with 2.5% v/v acetic acid;	[59]
	vitexin, quercetin, hyperoside, oligomeric procyanidins	*Crataegus monogyna*	1. Extraction with ethanol for 1 h; 2. Filtration before analysis.	[60]
	vincristine, vinblastine	*Catharanthus roseus*	1. Extraction with isopropyl alcohol for 15 min; 2. Dry and dissolution of the residue with 10 mM acetic acid; 3. LLE with cyclohexane for 3 times; 4. Dry the acid aqueous fraction and dissolution of the residue with 10 mM acetic acid; 5. Filtration before analysis.	[61]
Marinating	cytisine, sophoramine, sophocarpine, matrine, oxymatrine	*Sophora flavescens*	1. Extraction with chloroform contained 0.1 mL ammonium hydroxide for 24 h; 2. Evaporation and dissolution of the residue with water; 3. Filtration before analysis.	[65]
	emetine, cephaeline	*Cephaelis ipecacuanha* *Cephaelis accuminata*	1. Extraction with 70% ethanol for 48 h; 2. Concentration under reduced pressure; 3. Dilution with 60% methanol; 4. Addition of internal standard solution before analysis.	[66]

		Ipecac syrup (ipecacuanhae formulation)	1. Extraction with alcohol/water (3:1, v/v) for 72 h; 2. Evaporation under reduced pressure; 3. Washing the residue with water; 4. Evaporation water fraction; 5. Dissolution of the residue with hydrochloric acid and ethanol; 6. Addition of internal standard solution before analysis.	
Leaching	chlorogenic acid, caffeic acid, aloe-emodin, emodin, rhein	Huangdan Yinchen Keli (Chinese medicine formulation)	1. Extraction with ethanol for 24 h; 2. Filtration and washing the residue with ethanol twice; 3. Dilution with ethanol and/or sodium hydroxide solution.	[67]
PLE (pressurized liquid extraction)	18β-glycyrrhetinic acid, glycyrrhizin	*Glycyrrhiza uralensis*	1. PLE with methanol for 20 min.	[70]
	aristolochic acids I, II	*Aristolochia fangchi* *Aristolochia debilis*	1. PLE with methanol for 20 min; 2. Addition of internal standard solution before analysis.	[71]
	berberine, strychnine	*Strychnos nux-vomica* *Coptis chinensis* *Coptis deltoidea* *Coptis teeta*	1. PLE with methanol for 20 min; 2. Addition of internal standard solution before analysis.	[72]
	aloe-emodin, emodin, chrysophanol, physcion, rhein	*Rheum officinale*	1. PLE with methanol for 5 min; 2. Adjust the volume with buffer.	[69]

Supplementary Table 2. The buffers usually used for CZE analysis of phytochemical bioactive compounds

Buffer			Components	Additives	Temperature (°C)	Voltage (KV)	Column* (cm×μm, i.d.)	Detector	Injection	Ref
Type	Concentration (mM)	pH								
Borate	500	8.6	adenine, uracil, adenosine, guanosine, uridine, inosine	12.2% acetonitrile	20	20	FSC, 48×75	UV, 254 nm	H, 50 mbar×6 s	[144]
	200	8.5	adenosine, guanosine, uridine		20	20	FSC, 50×75	UV, 254 nm	H, 586 kPa×6 s	[68]
	150	10	quercetin, rutin, quercitrin, kaempferol, catechin, gallic acid	5% methanol	32	15	FSC, 42.5×50	UV, 270 nm	H, 50 mbar×10 s	[35]
	120	8.8	aristolochic acid I, II	10 mM β-CD	10	30	FSC, 40×50	UV, 254 nm	H, 50 mbar×5 s	[53]
	100	8.5	GSH, γ-EC, CIIIMT		25	30	FSC, 50×75	UV, 380 nm	H, 0.5 psi×5 s	[136]
	80	9.2	7 calystegines		50	25	FSC, 72×50	UV, 191 nm	H, 50 mbar×5 s	[97]
	75	10	13 C-glycosylflavones, 1 flavone O-glucoside	5% methanol	50	18	FSC, 56×50	UV, 395 nm	H, 50 mbar×2 s	[38]
	70	9.22	glabridin, liquiritin, licochalcone A, glycyrrhizin, glycyrrhetic acid		20	25	FSC, 50×50	UV, 254 nm	H, 0.034 atm×5 s	[157]
	60	10	saponins 1-4	20 mM β-CD	25	12	FSC, 60×50	UV, 195 nm	H, 10.0 cm×5 s	[111]
	60		cytidine, adenosine, guanosine, uridin	10% 2-propanol 20% acetonitrile	25	20	FSC, 23.5×50	UV, 254 nm	H, 1 kPa×10 s	[140]
	50	10	icariin, epimedin A, B, C	22% acetonitrile	25	15	FSC, 48×75	UV, 270 nm	H, 50 mbar×5 s	[49]
	50	8.15	vitexin-2"-rhamnoside, hyperside, rutin, vitexin	15% acetonitrile	25	15	FSC, 45.5×50	UV	H, 20 psi×s	[91]
	50	8.2	vitexin, quercetin, hyperoside, oligomeric procyanidins		25	25	FSC, 62.5×50	UV, 280 nm	H, 300 mbar×s	[60]
	50	10.1	carnosic acid, carnosol		25	30	FSC, 56×50	UV, 250 nm	H, 100 mbar×s	[90]
	50	9.62	salidroside, *p*-tyrosol	30% methanol	21.5	17.5	FSC, 43.4×75	UV, 214 nm	H, 5 s	[48]
	50	8.2	aloe-emodin, chrysophanol, emodin, physcion, rhein	25% isopropyl alcohol 25% acetonitrile	20	25	FSC, 48×75	UV, 230 nm	H, 50 mbar×6 s	[69]
	45	9.6	tyrosol, hydroxytyrosol, vanillic acid, deacetoxy, oleuropein aglycon, pinoresinol, acetoxypinoresinol		30	27	FSC, 40×50	UV, 200 nm	H, 0.5 psi×3 s	[57]
	45	9.6	21 phenols and polyphenols		30	27	FSC, 40×50	UV, 200 nm	H, 0.5 psi×3 s	[94]
	40	9	baicalin		25	17	FSC, 34.8×50	UV, 285 nm	H, 68.95 kPa×s	[141]
	40	10	saikosaponins a, c, d	mono-3-phenylcarbamoyl-	22	20	FSC, 50×50	UV, 214 nm		[86]

			β-CD (8 mM)						
30	9	hydroxysafflor yellow A, safflamin C, safflor yellow A, safflamin A	10% methanol	25	15	FSC, 30×50	UV, 270 nm	H, 8 psi×s	[43]
30		icariin	10% acetonitrile	25	25	FSC,100 (TL) ×75	UV, 254 nm	H, 10 s	[101]
30	9	echinocoside, verbascoside, pedicularioside M, pedicularioside A	10% mathanol	25	15	FSC, 30×50	UV, 250 nm	H, 8 psi×s	[45]
30	9.47	20-hydroxy ecdysone, acteoside, 3,7-dimethoxy-quercetin, rutin		21.5±0.5	20	FSC, 43.4×75	UV, 254 nm	H, 10.0 cm×5 s	[54]
30	9.5	chlorogenic acid, caffeic acid aloe-emodin, emodin and rhein			18	polyimide-coated FSC, 7 (TL) ×25	AD, 1.0V	E, 18kv×10 s	[67]
20	8.5	cinnamic acid, ferulic acid, eukovoside	10% methanol	21.5±0.5	20	FSC, 42.4×75	UV, 254 nm	H, 10.0 cm×5 s	[55]
30	9.5	aristolochic acids I, II		18	25	FSC, 35×50	UV, 254 nm	H, 0.3 psi×15 s	[71]
30	9.3	elenolic acid, ligstroside aglycon, oleuropein aglycon, (1)-pinoresinol		25	25	FSC, 110×75	UV, 214 nm	H, 0.5 psi×8 s	[93]
30		glycyrrhizin		25	25	FSC, 100×75	UV, 254 nm	H, 10 s	[137]
30	10	emodin, chrysophanol, aloe-emodin, rhein, emodin-8-β-D-glucoside, chrysophanol-8-β-D-glucoside, rhein-8-β-D-glucoside, sennoside A, B	5 mM α-CD 20% acetonitrile	20	20	FSC, 50×75	UV, 254 nm	H, 0.5 psi×5 s	[44]
30	10.5	emodin, chrysophanol, emodin-8-β-Dglucoside, chrysophanol-8-β-D-glucoside	5 mM α-CD 10% acetonitrile	20	20	FSC, 50×75	UV, 254 nm	H, 0.5 psi×5 s	[109]
25	9.3	flavone-O- glycosides, C-glycosides	20% mathanol	35	30	FSC, 58×50	UV, 270 nm	H, 1.5 psi×3 s	[37]
25	10	gastrodin, 4-hydroxybenzyl alcohol, vanillyl alcohol, vanillin, 4-hydroxybenzaldehyde	10% acetonitrile	23	18	FSC, 42.4×75	UV, 214 nm	H, 10.0×4 s	[103]
25	9.4	cordycepin, adenosine		20	20	FSC, 30×45	UV, 258 nm	H, 4.8 kPa×5 s	[56]
25	9.6	14 phenolic acids		25	25	FSC, 50×75	UV, 210 nm	H, 0.5 psi×8 s	[96]
25	9.4	cordycepin, adenosine		20	20	FSC, 41×45	UV, 258 nm	H, 0.5 Psi×5 s	[133]
25	9.5	adenosine, uridine, guanosine, inosine		25	20	FSC, 42×45	UV, 260 nm	H, 5 kPa×20 s	[51]
25	9.4	flavone, trans-resveratrol, catechin, chlorogenic acid, quercetin, myricetin	ethanol		18	FSC, 70×50	UV, 240 nm		[148]
20	10	quercetin, kaempferol, isorhamnetin	4 mg/mL 1B-3MI-TFB	25	15	FSC, 30×50	UV, 270 nm	H, 8psi×s	[39]

	20	10	quercetin, kaempferol, isorhamnetin	5 mg/mL DM-β-CD	25	15	FSC, 30×50	UV, 270 nm	H, 8 psi×s	[42]
	20	10.5	7-hydroxy-coumarin, 7-hydroxy-8-methoxy-coumarin, 7-O-β-D-glucosyl-coumarin		25	15	FSC, 30×50	UV, 230 nm	H, 10 psi×s	[58]
	15	9.8	paeonol, oxypaeoniflorin, benzoic acid, pentagalloylglucose, gallic acid		30	25	FSC, 81.5×75	UV, 230 nm	H, 50 mbar×3 s	[40]
	15	8.5	rutin, protocatechuic aldehyde, chlorogenic acid, luteolin, protocatechuic acid	1 mM SDS 0.42 mM luminol		16	SC, 48×50 RC, 25×530	CL	H, 10.0 cm×10 s	[173]
	10		ferulic acid		25	25	FSC, 100 (TL) ×75	UV, 214 nm	H, 10 s	[47]
	10	9.25	glycyrrhizin		25	18	FSC, 35×75	UV, 254 nm	H, 0.3psi×10 s	[70]
	10	8.5	2,3,5,40-tetrahydroxystilbene-2-O-β-D-glucoside, baicalin	0.3 mM luminol		20	SC, ×50 RC, ×530	CL	H, 10.0 cm×10 s	[175]
	8	8.5	protocatechuic aldehyde, protocatechuic acid	0.28 mM luminol		20	SC, ×50 RC, ×530	CL	H, 10.0 cm×10 s	[172]
Phosphate	110	3	cytisine, sophoramine, sophocarpine, matrine, oxymatrine	15% 2-propanol	25	27	FSC, 50×75	UV, 214 nm	E, 8 kv×11 s	[65]
	55	7	littorine, atropine enantiomers	2.9 mM sulfated-β-CD	20	20	FSC, 40×50	UV, 195 nm	H, 50 mbar×10 s	[116]
	50	8	atropine, scopolamine	10% THF (tetrahydrofuran)	25	15	FSC, 54.6 (TL) ×50	UV, 210 nm	H, 50 mbar×10 s	[87]
	50	2.5	(−)-Galanthamine, narwedine derived analogous compounds	30 mM DM-β-CD	20	20	FSC, 40×50	UV, 216 nm	H, 20-60 mbar×2-5 s	[115]
	40	7.8	atropine, scopolamine, tropic acid, nor-(−)-scopolamine		25	20	FSC, 60×75	UV, 214 nm	H, 0.5 psi×4 s	[92]
	25	7.5	isoxazolinones	8% 1-propanol	30	22.5	FSC, 52.6×75	UV, 254 nm	H, 10 s	[102]
	24	10.85	aloin, aloe-emodin			15	FSC, 52×75	UV, 254 nm	H, 5 s	[41]
	20	12.1	curcumin, monodemethoxycurcumin, bisdemethoxycurcumin	14 mM β-CD	27	20	FSC, 30×50	UV, 470 nm	H, 0.5 psi×1-5 s	[110]
	20	7	ferulic, gallic, protocatechuic, cinnamic, caffeic, gentisic, chlorogenic acid		40	25	FSC, 64.5 (TL) ×50	UV, 280 nm	H, 50 mbar×2 s	[134]
	20	8	rutin, kaempferol, quercetin, myricetin, apigenin, ethacrynic acid, xanthene-9-carboxylic acid	10% acetonitrile 6% methanol	30	25	FSC, 50×75	UV, 220 nm	H, 50 mbar×3 s	[95]
	20	8.48	atropine, scopolamine			15	FSC, 50 (TL) ×25	ECL, 1.2V	E, 10 kv×7 s	[177]

	15	9.7	curcumin			16	FSC, 32 (TL) ×25	AD, 1.2V	E, 9 kv×6 s	[162]
	15	6.4	protocatechuic aldehyde, protocatechuic acid		25±0.5	24	FSC, 65 (TL) ×25	AD, 1.0V	E, 24 kv×10 s	[163]
	10	9	aesculin, aesculetin			15	FSC, 30 (TL) ×25	AD, 1.0V	E, 9 kv×4 s	[164]
Acetate	500	3.4	berberine, hydrastine	83.3% mathanol	25	15	FSC, 21×50	UV, 225 nm	H, 0.5 psi×5 s	[104]
	200	6.2	vincristine, vinblastine			10	FSC, 60×50	UV, 254 nm		[61]
	100	5.4	glucosinolate	30% acetonitrile	30	25	FSC, 51.5×50	UV, 225 nm	H, 50 mbar×10 s	[89]
	100	3.1	thebaine, codeine, morphine, papavarine, narcotine	30% methanol	25	15	FSC, 55×50	UV, 224 nm	H, 300 mbar×s	[59]
	50	3.1	berberine, strychnine		25	18	FSC, 35×75	UV, 254 nm	H, 0.3 psi×10 s	[72]
	50	4.6	huperzine A		25	10	FSC, 35×75	UV, 230 nm	H, 10 s	[156]
	20	3.64	strychnine, brucine		25	25	FSC, 50×75	UV, 214 nm	H, 5 s	[36]
Citrate	100	2.7	berberine, isoguanosine			12	FSC, 44 (TL) ×75	UV, 254 nm	H	[135]
	40	4.5	matrine, sophocarpine, sophoridine, oxymatrine, oxysophocarpine	50% methanol	25	30	FSC, 51.5×50	UV, 201 nm	H, 3 kPa×5 s	[46]
	40	8.5	hyoscyamine, scopolamine, littorine, tropine, 6β-hydroxyhyoscyamine		15	20	FSC, 22×50	UV, 200 nm MS	H, 50 mbar×6 s	[145]
Miscellaneous										
NaOH	50	12.7	sucrose, glucose, fructose		22	5	FSC, 45 (TL) ×25	AD, 0.65V	E, 5 kv×10 s	[132]
	45		fucose, glucose, arabinose, rhamnose			12	FSC, 75 (TL) ×25	AD, 0.60V	E, 8 s	[62]
	45		fucose, galactose, glucose, arabinose, rhamnose, xylose			12	polyimide-coated FSC, 50 (TL) ×25	AD, 0.60V	E, 8 s	[63]
carbonate	25	10	Glycyrrhizin, 18α-Glycyrrhetic acid, 18β-Glycyrrhetic acid	10% methanol 10% ethylene- glycol 0.4% β-CD	25	-25	FSC, 8.5×50	UV, 254 nm	H, 50 mbar×30 s	[64]
	20	7	γ-glutamyl-S-ethenyl-cysteine		25	15	FSC, 30×50	MS	H, 0.5 psi×5 s	[181]
phthalate	15	5.6	oxalic, tartaric, formic, malic, citric, succinic, glutaric, acetic, lactic acid	0.6 mM TTAB	25	-15	FSC, 50×75	UV, 254 nm	H, 20 psi×5 s	[106]
1B-3MI-TFB	60	10	4 anthraquinones	4 mM β-CD	25.5±0.5	20	FSC, 42.4×75	UV, 254 nm	H, 10.0 cm×5 s	[52]
H_3BO_3 / H_3PO_3	80+20	8.1	tricin-7-O-neohesperidoside, luteolin-7-O-galactoside, chrysoeirol-7-O-neohesperidoside, lonicerin, rutin, hyperoside, quercetin, avicularin, luteolin	15% acetonitrile	25	28	FSC, 64×50	UV, 380 nm	H, 50 mbar×8 s	[50]
Na_2B_4	25+50	7.9	rutin			17	FSC, 40	AD,	E, 7 s	[85]

O_7/ NaH_2PO_4							(TL) ×25	0.80V		
borate/ Tris	100+25	8.2	GSSG, GSH	0.2% w/v MPA	25	30	FSC, 60 (TL) ×75	UV, 185 nm	H, 30 s	[146]
Tris-H_3PO_4	40	2	noradrenaline, dopamine	15% mathanol	25	15	FSC, 30×50	UV, 214 nm	H, 8 psi×s	[88]
Tris/ MOPSO/ H_3BO_3	50+25+55	8.75	hyperoside, isoquercitrin, quercitrin, quercetin, rutin	20% methanol 0.2% HEC	25		FSC, 16 (TL) ×300	UV, 254 nm		[80]
Tris/ MOPSO/ H_3BO_3	50+25+10	9	caffeic acid, cinnamic acid, chlorogenic acid, ferulic acid, quercetin, rutin	20% methanol 0.2% HEC	25		FSC, 16 (TL) ×300	UV, 254 nm		[81]
HEPPSO/ molybdate	25+2	7.4	apigenin, hyperoside, luteolin, quercetin, rutin, ferulic, caffeic, p-coumaric, chlorogenic acid	25% methanol	25	25	FSC, 45×100	UV, 263 nm	H, 50 mbar×6 s	[129]
citric acid/ phosphate	50+100	4.4	emetine, cephaeline	2.5% methanol	20	25	FSC, 67.5 (TL) ×75	UV, 205 nm	H, 50 mbar×3 s	[66]
EACA / ammonium hydroxide	10+100		silybin, isosilybin, silydianin, silychristin	0.5% PVP10 0.1% HEC			FEP, 20×320	UV, 254 nm	H	[130]
NaH_2PO_4/ NaCl	60+60	7	L-Ascorbic acid	0.0001% HDM	23	-15	FSC, 25×50	UV, 265 nm	H, 50 mbar×2 s	[131]

*, Effective length; FSC, fused silica capillary; SC, separation capillary; RC, reaction capillary; AD, amperometric detection; CL, chemiluminescence; ECL, electrochemiluminescence; MS, mass spectrometry; TL, total length; FEP, fluorinated ethylene-propylene copolymer capillary; H, hydrodynamic; E, electrokinetic.