Supplementary Information (SI) for Analytical Methods.

Supplementary information

Table S1 Mass spectrum information and chromatographic information of 54 dye components

Compound ID	Retention time (min)	Formula	Adduct	Normalized collision energy	Fragment ions (m/z)
A01	1.21	$C_5H_{10}N_4O$	M+H	50%	45.0335, 55.0291, 72.0444, 82.0400, 108.0556, 99.0553, 126.0662
A02	1.52	$C_8H_{12}N_2O$	M+H	50%	91.0542, 118.0651, 135.0917
A03	1.37	$C_4H_8N_6$	M+H	70%	55.0291, 72.0556, 82.0400, 99.0665
A04	5.72	$C_{11}H_{18}N_2O_2$	M+H	70%	122.0839, 135.0917, 147.0917
A05	6.43	$C_6H_5ClN_2O_3$	M-H	70%	45.9935, 50.0036, 76.0193, 93.0220, 134.0122, 120.0091, 156.9936
A06	6.41	$C_9H_{13}NO_2$	M+H	70%	45.0335, 79.0542, 108.0570, 123.0679, 150.0913, 135.0679
A07	6.10	$C_8H_{10}N_2O_4$	M-H	70%	94.0298, 122.0248, 132.0329
A08	6.83	$C_9H_{12}N_2O_4$	M+H	70%	80.0495, 91.0291, 96.0444, 96.0444, 148.0631, 109.0522, 161.0709
A09	8.63	C_7H_8ClNO	M+H	70%	55.0542, 68.0131, 77.0386, 95.0491, 143.0132, 122.0600
A10	7.56	C_7H_8ClNO	M+H	70%	77.0386, 104.0495, 123.0679, 140.0262
A11	8.25	$C_8H_{10}N_2O_3$	M+H	50%	65.0386, 92.0495, 107.0604, 119.0604, 165.0659, 147.0553
A12	4.90	$C_8H_9NO_2$	M+H	50%	109.0284, 124.0393
A13	9.20	$C_9H_{12}N_2O_3$	M+H	50%	79.0542, 94.0651, 106.0651, 121.0760, 149.0709, 135.0553, 161.0709
A14	6.55	$C_{15}H_{20}N_4O_2$	M+H	50%	123.0553, 137.0709, 165.1022
A15	6.46	$C_7H_{11}N_3O_2$	M+H	70%	112.0505, 140.0455
A16	4.19	$C_9H_{14}N_2O_2$	M+H	50%	123.0553, 138.0788, 150.0788
A17	7.12	C_6H_6O	M-H	70%	65.0397
A18	6.68	$C_9H_{11}NO_3$	M+H	70%	79.0542, 106.0651, 124.0757, 137.0471
A19	7.27	$C_{10}H_{14}N_2O_5$	M+H	70%	77.0386, 105.0447, 141.0573, 168.0682, 196.0631
A20	10.65	$C_{12}H_{11}N_3O_2$	M+H	70%	65.0386, 92.0495, 117.0573, 154.0651, 195.0791, 183.0917
A21	10.52	$C_{12}H_{10}N_2O_3$	M+H	70%	77.0386, 105.0447, 141.0573, 168.0682, 196.0631
A22	9.56	$C_{14}H_{10}N_2O_2$	M+H	100%	77.0386, 105.0335, 129.0699, 139.0542, 192.0682, 166.0651

S01	1.54	$C_6H_8N_2$	M+H	70%	65.0386, 92.0495
S02	1.78	C_6H_7NO	M+H	70%	66.0338, 93.0335
S03	1.88	$C_7H_{10}N_2$	M+H	100%	79.0542, 95.0604, 108.0682
S04	2.68	C_6H_7NO	M+H	70%	65.0386, 82.0651, 93.0335
S05	3.51	$C_6H_8N_2$	M+H	70%	65.0386, 92.0495
S06	3.72	$C_6H_7ClN_2$	M+H	70%	80.0495, 108.0682
S07	3.92	C_6H_7NO	M+H	70%	65.0386, 92.0495
S08	3.57	$C_6H_6O_2$	M-H	70%	81.0346
S09	4.36	$C_6H_7N_3O_2$	M+H	70%	81.0533, 91.0417, 108.0682, 119.0478
S10	6.11	$C_7H_{10}N_2$	M+H	100%	79.0542, 95.0604, 106.0651
S11	5.79	C_7H_9NO	M+H	70%	79.0542, 95.0491, 109.0522
S12	4.08	$C_7H_8O_2$	M-H	70%	55.0189, 67.0189, 79.0553
S13	6.36	C_7H_9NO	M+H	70%	79.0542, 95.0491, 106.0651
S14	7.06	$C_{10}H_{10}N_2O$	M+H	70%	54.0338, 65.0386, 118.0651, 106.0651, 133.0760
S15	4.90	$C_{11}H_{18}N_2$	M+H	70%	121.0760, 135.0917, 150.1152
S16	5.86	$C_6H_6N_2O_3$	M-H	70%	45.9935, 64.0067, 78.0349, 122.0248
S17	2.17	$C_6H_8N_2$	M+H	70%	65.0386, 92.0495
S18	1.84	$C_8H_{12}N_2O_2$	M+H	70%	123.0553, 124.0631, 125.0709
S19	2.19	$C_6H_6O_2$	M-H	70%	65.0397, 67.0189
S20	2.46	C_7H_9NO	M+H	70%	79.0542, 95.0491, 105.0335, 109.0522
S21	1.55	$C_5H_6N_2O$	M+H	100%	56.0495, 66.0338, 84.0444, 93.0335
S22	1.92	$C_{10}H_{16}N_2O_2$	M+H	70%	121.0760, 134.0839, 152.0944
S23	3.00	C_7H_9NO	M+H	70%	109.0522
S24	6.12	$C_6H_7N_3O_2$	M+H	70%	91.0417, 108.0682
S25	1.88	$C_5H_7N_3$	M+H	100%	56.0495, 66.0338, 93.0447
S26	3.34	$C_{10}H_{16}N_2$	M+H	70%	121.0760, 136.0995
S27	7.31	C_8H_7NO	M-H	30%	104.0506
S28	7.22	$C_6H_5ClO_2$	M-H	50%	69.0346, 79.0189, 97.0295, 107.0139
S29	7.68	$C_{10}H_8O_2$	M-H	70%	103.0553, 130.0424

S30	9.67	$C_{12}H_{12}N_2$	M+H	70%	65.0386, 93.0573, 108.0682, 167.0730
S31	7.48	$C_{10}H_8O_2$	M-H	70%	103.0553, 115.0553, 131.0502
S32	10.05	$C_{10}H_8O$	M-H	100%	101.0397, 115.0553

Table S2 The Scan mode, expected *m/z*, linear range, linear equation, correlation coefficient, detection limit and quantitative limit of 54 dye components

Compound ID	Scan mode	*m/z* (Expected)	Linear range (ng/mL)	Equation	*r*	LOD (μg/mL)	LOQ (μg/mL)	LOD* (μg/g)	LOQ* (μg/g)
A01	ESI+	143.09274	8-800	$y = 2.256 \times 10^5 x + 1.458 \times 10^6$	0.9995	0.2	0.4	0.5	1.7
A02	ESI+	153.10224	8-800	$y = 7.045 \times 10^5 x + 1.876 \times 10^7$	0.9991	0.7	2.3	1.8	5.8
A03	ESI+	141.08832	8-800	$y = 4.539 \times 10^4 x - 1.285 \times 10^5$	0.9996	0.2	0.5	0.5	1.7
A04	ESI+	211.14410	8-800	$y = 5.065 \times 10^5 x + 5.626 \times 10^6$	0.9988	0.1	0.2	0.3	0.8
A05	ESI-	186.99159	8-2000	$y = 3.534 \times 10^5 x - 1.375 \times 10^6$	0.9999	0.9	3.0	2.3	7.5
A06	ESI+	168.10191	8-800	$y = 2.277 \times 10^5 x + 3.075 \times 10^6$	0.9984	0.2	0.4	0.5	1.7
A07	ESI-	197.05678	8-2000	$y = 6.934 \times 10^4 x - 5.282 \times 10^5$	0.9997	0.1	0.2	0.3	0.8
A08	ESI+	213.08698	8-800	$y = 2.370 \times 10^5 x + 5.004 \times 10^6$	0.9969	0.1	0.2	0.3	0.8
A09	ESI+	158.03672	8-2000	$y = 4.256 \times 10^3 x - 4.301 \times 10^4$	0.9998	0.2	0.5	0.5	1.7
A10	ESI+	158.03672	20-2000	$y = 2.073 \times 10^3 x - 1.771 \times 10^4$	0.9999	5.7	19	14	48
A11	ESI+	183.07642	8-2000	$y = 4.620 \times 10^4 x - 2.354 \times 10^5$	0.9998	0.3	1.0	0.8	2.5
A12	ESI+	152.07061	8-2000	$y = 6.074 \times 10^4 x - 1.344 \times 10^6$	0.9996	1.8	5.8	4.5	15
A13	ESI+	197.09207	8-2000	$y = 1.518 \times 10^5 x - 6.496 \times 10^4$	0.9999	1.6	5.4	4.0	13
A14	ESI+	289.16590	40-2000	$y = 5.905 \times 10^3 x - 2.327 \times 10^4$	1.0000	12	41	30	99
A15	ESI+	170.09240	8-2000	$y = 5.198 \times 10^4 x - 8.069 \times 10^5$	0.9998	0.4	1.3	1.0	3.3
A16	ESI+	183.11280	8-800	$y = 4.206 \times 10^4 x - 2.433 \times 10^4$	0.9989	2.4	8.0	6.0	20
A17	ESI-	93.03459	20-2000	$y = 1.517 \times 10^4 x + 3.106 \times 10^5$	0.9999	6.7	22	17	56
A18	ESI+	182.08117	8-2000	$y = 1.339 \times 10^5 x + 5.256 \times 10^5$	0.9997	0.3	0.8	0.8	2.5
A21	ESI+	243.09755	8-800	$y = 2.970 \times 10^5 x + 2.625 \times 10^6$	0.9988	0.1	0.2	0.3	0.8
A22	ESI+	230.09240	8-800	$y = 1.044 \times 10^5 x + 2.346 \times 10^5$	0.9999	0.3	0.8	0.8	2.5

A23	ESI+	231.07642	20-2000	$y = 7.083 \times 10^3 x - 1.521 \times 10^4$	0.9999	3.7	12	9.3	31
A24	ESI+	239.08150	8-2000	$y = 2.994 \times 10^5 x + 6.972 \times 10^6$	0.9996	0.6	1.8	1.5	5.0
S01	ESI+	109.07602	8-800	$y = 1.624 \times 10^5 x + 3.039 \times 10^6$	0.9990	1.7	5.5	4.3	14
S02	ESI+	110.06004	8-800	$y = 3.941 \times 10^4 x - 4.794 \times 10^4$	0.9999	1.4	4.6	3.5	12
S03	ESI+	123.09167	8-800	$y = 1.306 \times 10^5 x{-}7.018 \times 10^5$	0.9996	0.2	0.6	0.5	1.7
S04	ESI+	110.06004	20-2000	$y = 1.266 \times 10^4 x - 1.784 \times 10^4$	0.9999	5.8	19	15	48
S05	ESI+	109.07602	8-800	$y = 8.494 \times 10^3 x - 9.382 \times 10^4$	0.9986	2.5	8.1	6.3	21
S06	ESI+	143.03705	20-2000	$y = 1.365 \times 10^4 x - 7.796 \times 10^4$	1.0000	3.5	12	8.8	29
S07	ESI+	110.06004	20-2000	$y = 2.747 \times 10^4 x - 2.210 \times 10^5$	0.9998	6.7	22	13	42
S08	ESI-	109.02950	8-2000	$y = 3.397 \times 10^4 x3.437 \times 10^5$	0.9999	1.6	5.4	4.0	13
S09	ESI+	154.06110	8-2000	$y = 3.228 \times 10^4 x - 9.970 \times 10^4$	1.0000	1.5	4.8	3.8	13
S10	ESI+	123.09167	8-800	$y = 1.647 \times 10^4 x - 1.110 \times 10^5$	0.9985	0.9	2.8	2.3	7.5
S11	ESI+	124.07569	8-800	$y = 5.868 \times 10^4 x + 1.021 \times 10^6$	0.9978	0.8	2.6	2.0	6.7
S12	ESI-	123.04515	8-2000	$y = 3.354 \times 10^4 x + 2.913 \times 10^5$	0.9999	2.4	8.0	5.0	17
S13	ESI+	124.07569	8-2000	$y = 1.123 \times 10^5 x + 2.501 \times 10^5$	0.9999	1.7	5.5	4.3	14
S14	ESI+	175.08659	8-800	$y = 3.355 \times 10^5 x + 5.487 \times 10^5$	0.9999	1.2	4.0	3.0	10
S15	ESI+	179.15428	8-2000	$y = 4.736 \times 10^5 x - 2.036 \times 10^6$	0.9997	0.6	2.0	1.5	5.0
S16	ESI-	153.03057	8-2000	$y = 6.290 \times 10^4 x + 1.862 \times 10^5$	0.9999	0.2	0.6	0.5	1.7
S17	ESI+	109.07602	8-2000	$y = 2.556 \times 10^4 x - 1.003 \times 10^5$	0.9999	1.4	4.5	3.5	12
S18	ESI+	169.09715	8-800	$y = 8.590 \times 10^4 x + 1.004 \times 10^6$	0.9985	0.2	0.7	0.5	1.7
S19	ESI-	109.02950	80-8000	$y = 4.681 \times 10^3 x + 2.003 \times 10^5$	0.9998	23.5	78	59	196
S20	ESI+	124.07569	8-2000	$y = 7.221 \times 10^4 x - 6.638 \times 10^5$	0.9999	0.9	2.7	2.3	7.5
S21	ESI+	111.05529	8-2000	$y = 7.045 \times 10^5 x + 1.876 \times 10^7$	0.9991	1.8	6.0	4.5	15
S22	ESI+	197.12845	8-2000	$y = 1.909 \times 10^5 x + 2.931 \times 10^6$	0.9997	0.1	0.4	0.3	0.8
S23	ESI+	124.07569	8-800	$y = 3.060 \times 10^5 x + 7.788 \times 10^5$	0.9998	0.3	0.8	0.8	2.5
S24	ESI+	154.06110	8-800	$y = 4.941 \times 10^4 x + 1.317 \times 10^5$	0.9998	0.5	1.5	1.3	4.2

S25	ESI+	110.07127	8-800	$y = 6.378 \times 10^5 x + 1.735 \times 10^7$	0.9988	0.2	0.7	0.5	1.7
S26	ESI+	165.13863	8-2000	$y = 2.871 \times 10^5 x + 2.278 \times 10^6$	0.9999	0.5	1.7	1.3	4.2
S27	ESI-	132.04549	20-800	$y = 1.257 \times 10^4 x + 3.867 \times 10^4$	0.9997	6.5	22	9.0	30
S28	ESI-	142.99053	8-2000	$y = 6.981 \times 10^4 x + 1.024 \times 10^5$	0.9999	1.8	5.8	4.5	15
S29	ESI-	159.04515	8-2000	$y = 1.131 \times 10^5 x - 2.425 \times 10^5$	0.9999	0.3	1.0	0.8	2.5
S30	ESI+	185.10732	8-2000	$y = 3.780 \times 10^5 x + 6.315 \times 10^6$	0.9988	0.2	0.6	0.5	1.7
S31	ESI-	159.04515	8-2000	$y = 1.484 \times 10^5 x + 1.544 \times 10^6$	0.9998	0.5	1.6	1.3	4.2
S32	ESI-	143.05024	8-2000	$y = 1.027 \times 10^5 x - 9.617 \times 10^4$	0.9999	0.1	0.2	0.3	0.8

y: peak area; *x*: mass concentration, ng/mL.

*: Calculated based on the dilution process of test solution I-1, while others solutions were determined through the dilution process of test solution II-1 (where I represents the test solution containing 0.05% D-isoascorbic acid, and II represents the test solution without the addition of 0.05% D-isoascorbic acid). LOD/LOQ (μg/g) = LOD/LOQ (ng/mL) × 500/0.2 (g)

Table S3 Sample background concentration, addition concentration, recovery, repeatability (n = 9) and relative standard deviation (RSD, n = 6) of 54 dye components

Compound ID	Background (ng/mL)	Added (ng/mL)	Recovery* (%)	Repeatability (n=9) (%)	RSD (%)
A01	0	40, 200, 800	77.2, 88.5, 83.1	6.7	1.5, 1.2, 2.1
A02	0	40, 200, 800	95.4, 104.7, 87.5	8.4	1.4, 1.8, 1.6
A03	0	40, 200, 800	69.9, 59.0, 51.0	14.9	3.4, 3.5, 2.9
A04	0	40, 200, 800	80.7, 107.7, 97.7	12.9	1.3, 1.3, 1.6
A05	0	40, 200, 800	129.3, 112.2, 113.8	8.5	1.7, 1.5, 0.9
A06	0	40, 200, 800	82.6, 111.9, 100.7	13.5	1.1, 1.2, 1.4
A07	0	40, 200, 800	94.2, 100.3, 112.9	8.4	1.2, 1.7, 1.0
A08	0	40, 200, 800	95.6, 104.7, 84.3	9.8	1.8, 1.8, 2.2
A09	0	40, 200, 800	91.1, 96.0, 106.7	7.7	3.3, 1.8, 1.2
A10	0	40, 200, 800	83.6, 90.3, 94.4	6.5	4.2, 1.0, 0.7
A11	0	40, 200, 800	84.1, 92.8, 100.6	8.1	2.7, 1.5, 1.0
A12	0	40, 200, 800	118.4, 95.9, 109.4	9.9	2.8, 4.1, 3.4
A13	0	40, 200, 800	87.5, 94.7, 103.1	7.5	1.8, 1.4, 1.4
A14	20.14	40, 200, 800	96.0, 84.6, 89.2	9.8	3.1, 3.8, 7.9
A15	0	40, 200, 800	88.1, 84.1, 93.7	6.0	2.3, 3.2, 1.8
A16	0	40, 200, 800	68.5, 69.8, 73.4	5.5	6.8, 7.0, 6.4
A17	0	40, 200, 800	85.7, 96.7, 109.0	11.2	10.0, 4.8, 2.7
A18	0	40, 200, 800	97.1, 96.4, 108.9	6.6	1.1, 1.4, 1.6
A19	0	40, 200, 800	94.8, 98.3, 84.3	7.6	1.7, 1.1, 0.7
A20	0	40, 200, 800	86.6, 90.1, 100.4	7.7	2.2, 2.0, 2.6

A21	0	40, 200, 800	84.5, 89.5, 102.1	9.1	2.3, 1.9, 1.2
A22	0	40, 200, 800	95.3, 110.3, 111.4	8.1	4.1, 1.6, 1.2
S01	0	40, 200, 800	87.5, 115.3, 102.0	12.4	2.3, 1.7, 0.9
S02	0	40, 200, 800	98.5, 100.2, 115.3	8.6	2.3, 3.2, 1.4
S03	31.26	40, 200, 800	108.3, 122.9, 103.1	10.1	3.0, 2.4, 3.0
S04	0	40, 200, 800	95.8, 100.5, 106.2	5.9	9.1, 2.0, 1.1
S05	0	40, 200, 800	101.3, 96.5, 98.3	6.5	3.4, 3.2, 2.3
S06	0	40, 200, 800	100.0, 98.7, 105.6	4.2	1.4, 1.5, 0.9
S07	0	40, 200, 800	111.9, 100.6, 107.4	5.8	6.2, 2.1, 2.3
S08	0	40, 200, 800	87.9, 95.8, 107.7	9.9	2.2, 1.4, 1.9
S09	0	40, 200, 800	97.3, 96.7, 105.1	5.0	1.4, 2.1, 1.8
S10	0	40, 200, 800	81.4, 73.3, 91.7	14.4	5.4, 3.2, 2.9
S11	0	40, 200, 800	95.6, 110.9, 112.9	9.7	1.9, 1.3, 0.9
S12	0	40, 200, 800	100.1, 103.8, 105.1	4.2	3.9, 3.6, 1.7
S13	0	40, 200, 800	100.5, 99.9, 108.6	5.1	4.4, 3.0, 1.5
S14	0	40, 200, 800	89.5, 95.0, 80.6	7.8	2.3, 0.9, 0.7
S15	0	40, 200, 800	98.3, 102.8, 104.5	5.7	4.8, 7.9, 5.0
S16	0	40, 200, 800	94.8, 104.4, 112.2	7.6	2.1, 1.6, 1.0
S17	0	40, 200, 800	101.2, 98.1, 105.2	4.0	3.2, 2.3, 2.2
S18	10.03	40, 200, 800	74.8, 89.1, 80.6	8.8	5.5, 4.5, 4.9
S19	0	160, 800, 3200	74.3, 89.9, 96.5	11.6	5.3, 7.2, 2.4
S20	0	40, 200, 800	111.8, 103.4, 110.6	4.8	7.1, 8.5, 6.0
S21	0	40, 200, 800	87.5, 105.6, 109.3	10.3	1.5, 0.9, 0.9
S22	0	40, 200, 800	90.3, 100.1, 102.9	6.8	0.8, 1.3, 1.6
S23	0	40, 200, 800	94.1, 101.9, 105.8	6.7	3.0, 2.2, 1.9
S24	0	40, 200, 800	93.1, 99.9, 86.0	9.4	1.3, 1.7, 0.7

S25	0	40, 200, 800	91.6, 105.2, 108.8	8.1	0.8, 1.0, 0.9
S26	0	40, 200, 800	98.4, 109.3, 113.5	7.2	1.6, 2.3, 2.1
S27	0	40, 200, 800	88.7, 99.4, 102.6	7.4	5.6, 1.2, 1.2
S28	0	40, 200, 800	92.6, 102.0, 110.4	8.2	1.7, 1.4, 0.9
S29	0	40, 200, 800	100.3, 105.8, 111.6	5.2	1.3, 1.2, 0.7
S30	0	40, 200, 800	97.1, 114.8, 108.3	8.0	3.6, 4.0, 2.0
S31	0	40, 200, 800	95.8, 106.2, 108.0	6.2	1.2, 0.6, 1.1
S32	0	40, 200, 800	90.8, 100.4, 106.7	7.4	1.5, 1.4, 0.9

∗ Recovery = (Found−Background)/Added × 100%.

Table S4 Comparison of metrics of the determination methods for hair dye components

Target substance	Method	Run time (min)	Range	LOD	LOQ	Reference
32 hair dye components	HPLC-DAD	105[a]	10–500 mg L^{-1}	10–100 μg g^{-1}	32–300 μg g^{-1}	[1]
	LC-MS/MS (qualitative confirmation)	46[b]	/	0.05–1 ng	/	
15 hair dye components	HPLC-DAD	40	5–500 mg L^{-1}	10–80 μg g^{-1}	28–200 μg g^{-1}	[2]
	LC-MS/MS (qualitative confirmation)	20	/	0.03 ng	/	
13 components in oxidative hair dyes	HPLC-DAD	28	2–500 mg L^{-1}	200–2000 ng mL^{-1}	Not reported	[3]
PPD, 4-MAP, OAP, PAP, OPD, and MAP	HPLC-DAD	25	1.25–40 mg L^{-1}	2.0–7.4 ng	6.5–24.5 ng	[4]
22 dye components	GC-MS	45	5–500 mg L^{-1}	15–35 μg g^{-1}	47–115 μg g^{-1}	[5]
17 components in oxidative hair dyes	GC-MS	25	0.5–1000 mg L^{-1}	2–380 μg g^{-1}	7.5–1267.5 μg g^{-1}	[6]
11 dye components	LC-MS/MS	12	0.05–40 mg L^{-1}	0.15–10 μg g^{-1}	0.5–40 μg g^{-1}	[7]
5 semi-permanent hair dye components	LC-MS/MS	10	0.001–0.2 mg L^{-1}	0.66–20 ng mL^{-1}	2.0–63 ng mL^{-1}	[8]
11 phenols and anilines in oxidative hair dyes	LC-MS/MS	16	0.04–1.0 mg L^{-1}	1.2–9.4 μg g^{-1}	Not reported	[9]
54 dye components	LC-HRMS	15	0.008– 8 mg L^{-1}	0.1–23.5 ng mL^{-1}	0.2–78.1 ng mL^{-1}	This work

Notes: [a] Two chromatographic conditions, with run times of 55 and 50 minutes, are necessary for determination. [b] Positive ion mode and negative ion mode are required for determination separately, each with a run time of 23 minutes.

DAD: Diode Array Detector, PPD: *p*-Phenylenediamine, 4-MAP: 4-Methylaminophenol sulfate, OAP: *o*-aminophenol, PAP: *p*-aminophenol, OPD: *o*-phenylenediamine, MAP: *m*-Aminophenol, HRMS: high-resolution mass spectrometry

References

1. National Medical Products Administration, The inspection methods for 32 components, including p-Phenylenediamine, in cosmetics, https://www.nmpa.gov.cn/directory/web/nmpa/images/1614678355048063969.doc, (accessed Aug 6th, 2024)
2. National Medical Products Administration, The inspection methods for 15 raw materials including 2-amino-4-hydroxyethylaminoanisole sulfate in cosmetics, https://www.nmpa.gov.cn/directory/web/nmpa/images/1693213371906014802.doc, (accessed Aug 6th, 2024)
3. Y. Lai, H. H. Wang, Q. M. Dong, H. X. Chen, R. Lin and Y. P. Cai, *J. Cosmet. Sci.*, 2012, **63**, 321-331, https://pubmed.ncbi.nlm.nih.gov/23089354/.
4. Y.-C. Yeh, H.-J. Wu, W.-S. Huang, C.-C. Lin, Y.-P. Chen, M.-C. Tzou and J.-C. Tsai, *J. AOAC. Int.*, 2019, **94**, 650-654, https://doi.org/10.1093/jaoac/94.2.650.
5. P. Zhang, K. Li, J. Zhou, W. Han and Y. He, Se Pu, 2024, 1-6, https://doi.org/10.3724/SP.J.1123.2023.11018.
6. Y. Lai, H. X. Chen, R. Lin, H. H. Wang, Q. M. Dong and Z. P. Huang, *Chem. J. Chin. Univ.*, 2011, **32**, 2286-2292.
7. Y.-X. Gu, L.-S. Chen and L. Nie, *J. Chromatogr. Sci.*, 2023, **00**, 1-9, https://doi.org/10.1093/chromsci/bmad071.
8. J. H. Franco, B. F. da Silva and M. V. B. Zanoni, *Anal. Methods*, 2020, **12**, 5415-5423, https://doi.org/10.1039/D0AY01395A.
9. C. Y. Shao, T. Qin, D. Z. Sun, J. Liu and Y. W. Shao, *Chin. J. Anal. Chem.*, 2014, **42**, 781-782, https://doi.org/10.3724/SP.J.1096.2014.30843.