**Table S1.** Tentatively identified major metabolites from BPI chromatograms of QA (in negative mode).

**Table S2.** The optimized MRM parameters of the five target analytes.

**Table S3.** The regression equation, linear range, LOD, LOQ, intra-day and inter-day precision, and recovery of the developed UPLC-TQ-MS/MS method.

**Table S1.**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| NO | Component name | Observed RT (min) | Formula | Observed neutral mass (Da) | Observed m/z | Mass error (mDa) | Adducts |
| 1 | Cirsilineol | 4.51 | C17H14O7 | 330.0715 | 375.0697 | -2.5 | +HCOO |
| 2 | 4-Dicaffeoylquinic Acid | 5.76 | C16H18O9 | 354.0957 | 353.0885 | 0.6 | -H |
| 3 | Acrifolide | 6.54 | C15H16O6 | 292.0947 | 337.0929 | 0 | +HCOO |
| 4 | 1β,2β-epoxy-3β,4α,10α-trihydroxyguaian-6α,12-olide | 6.63 | C15H20O6 | 296.1262 | 295.1189 | 0.2 | -H  |
| 5 | Isotanciloide | 6.63 | C15H20O6 | 296.1262 | 295.1189 | 0.2 | -H  |
| 6 | Argyinolide G | 7.18 | C17H22O6 | 308.1271 | 307.1199 | 1.1 | -H  |
| 7 | Schaftoside | 7.24 | C26H28O14 | 564.1494 | 563.1421 | 1.5 | -H |
| 8 | Isoschaftoside | 7.48 | C26H28O14 | 564.1486 | 563.1413 | 0.7 | -H  |
| 9 | Argyin D | 7.61 | C15H18O5 | 278.116 | 277.1088 | 0.6 | -H |
| 10 | 10-epi-artecanin | 7.95 | C15H18O5 | 278.116 | 277.1087 | 0.6 | -H |
| 11 | Artemetin | 8.10 | C20H20O8 | 388.115 | 433.1132 | -0.8 | +HCOO |
| 12 | Hyperoside | 8.39 | C21H20O12 | 464.0971 | 463.0899 | 1.7 | -H |
| 13 | 3alpha,4alpha,10beta-trihydroxy-8alpha-acetoxyguai-1,11(13)-dien-6alpha,12-olide | 8.59 | C17H22O7 | 338.1368 | 337.1295 | 0.2 | -H |
| 14 | 3,4-di-O-caffeoylquinic acid | 8.93 | C25H24O12 | 516.1278 | 515.1206 | 1.1 | -H |
| 15 | Chlorogenic acid | 9.29 | C16H18O9 | 354.0953 | 353.088 | 0.2 | -H |
| 16 | 4,5-di-O-caffeoylquinic acid | 9.29 | C25H24O12 | 516.1275 | 515.1203 | 0.8 | -H |
| 17 | 4-Hydroxyacetophenone | 10.16 | C8H8O2 | 136.0529 | 135.0456 | 0.5 | -H |
| 18 | 3,4-O-dicaffeoylquinic acid | 10.16 | C25H24O12 | 516.1285 | 515.1212 | 1.7 | -H |
| 19 | Chrysoeriol 7-O-glucoside | 11.08 | C22H22O11 | 462.3601 | 461.3528 | 0.8 | -H |
| 20 | Eriodictyol | 12.68 | C15H12O6 | 288.0638 | 287.0565 | 0.4 | -H |
| 21 | Eupatilin 7-O-beta-D-glucopyranoside | 13.08 | C24H26O12 | 506.1433 | 551.1415 | 0.8 | +HCOO |
| 22 | Luteolin | 13.31 | C15H10O6 | 286.0484 | 285.0411 | 0.7 | -H |
| 23 | Apigenin | 13.61 | C15H10O5 | 270.0534 | 315.0516 | 0.6 | +HCOO |
| 24 | Chrysoeriol | 13.67 | C16H12O6 | 300.2678 | 299.2909 | 1.8 | -H |
| 25 | 5,6,2’,4’-tetrahydroxy-7,5’-dimethoxyflavone | 13.82 | C17H14O8 | 346.0692 | 345.0619 | 0.3 | -H |
| 26 | Naringenin | 14.86 | C15H12O5 | 272.0686 | 271.0613 | 0.1 | -H |
| 27 | Hispidulin | 15.55 | C16H12O6 | 300.064 | 299.0567 | 0.6 | -H |
| 28 | Eupafolin | 15.7 | C16H12O7 | 300.0639 | 299.0566 | 0.5 | -H |
| 29 | Jaceidin | 16.01 | C18H16O8 | 360.0845 | 359.0772 | 0 | -H |
| 30 | Jaceosidin | 16.07 | C17H14O7 | 330.0745 | 329.0672 | 0.5 | -H |
| 31 | Artemisian D | 16.08 | C30H36O8 | 524.2411 | 569.2393 | 0.1 | +HCOO |
| 32 | Artemisian A | 16.23 | C30H36O8 | 524.2403 | 523.233 | -0.7 | -H |
| 33 | 5,7-dihydroxy-3',4'-dimethoxy flavone | 16.98 | C17H14O6 | 314.0796 | 359.0778 | 0.6 | +HCOO |
| 34 | Apicin | 16.98 | C18H16O8 | 360.0851 | 359.0778 | 0.6 | -H |
| 35 | Ladanein | 18.07 | C17H14O6 | 314.0796 | 313.0723 | 0.6 | -H |
| 36 | 5,6-dihydroxy-3',4',7-trimethoxyflavone | 18.63 | C18H16O7 | 344.0905 | 343.0833 | 0.9 | -H |
| 37 | Eupatilin | 18.63 | C18H16O7 | 344.0905 | 343.0833 | 0.9 | -H |
| 38 | Artemisian C | 18.81 | C30H36O8 | 524.2418 | 523.2345 | 0.8 | -H |
| 39 | Artemisianin D | 18.97 | C30H36O8 | 524.2416 | 523.2343 | 0.5 | -H  |
| 40 | Chrysoplenitin | 19.61 | C19H18O8 | 374.1009 | 373.0936 | 0.7 | -H |
| 41 | Argyinolide O | 20.58 | C30H34O6 | 490.2362 | 535.2344 | 0.7 | +HCOO |
| 42 | 13-oxo-9Z,11E-octadecadienoic acid | 21.45 | C18H30O3 | 294.2204 | 293.2131 | 0.9 | -H |
| 43 | Artanomaloide A | 21.83 | C35H42O8 | 590.2895 | 635.2877 | 1.5 | +HCOO |
| 44 | Artemilinin A | 22.82 | C30H40O7 | 528.3065 | 527.2992 | -2.2 | -H |

**Table S2.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| NO | Analyte | RT | Monitoring ion | Transitions (amu)  | Fragmentor (V)  | Collision energy (V)  |
| 1 | 4-Dicaffeoylquinic acid | 5.24 | [M-H]- | 353.00→173.08 | 38 | 16 |
| 2 | Schaftoside | 7.18 | [M-H]- | 563.10→383.13 | 90 | 32 |
| 3 | Hyperoside | 8.25 | [M-H]- | 463.03→300.19 | 40 | 24 |
| 4 | 3,4-di-O-caffeoylquinic acid | 9.22 | [M-H]- | 515.10→173.08 | 56 | 28 |
| 5 | Hispidulin | 16.16 | [M-H]- | 299.03→137.06 | 54 | 30 |

**Table S3.**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| NO | Standards | Regression equation  | Linear range (ng/mL)  | R2  | LOD (ng/mL) | LOQ (μg/ mL) | Intra-day RSD (%) | Inter-day RSD (%)  | Recovery range (%) |
| 1 | 4-Dicaffeoylquinic Acid | y=86.488x-151.05 | 3.20-2000.00 | 0.9999 | 1.04 | 3.15 | 1.28 | 0.99 | 99.26±1.47 |
| 2 | Schaftoside | y=63.919x-81.799 | 3.20-2000.00 | 0.9997 | 1.05 | 3.18 | 2.03 | 1.98 | 101.74±1.77 |
| 3 | Hyperoside | y=151.14x-129.05 | 1.60-2000.00 | 0.9999 | 0.51 | 1.55 | 1.18 | 1.36 | 98.26±1.63 |
| 4 | 3,4-di-O-caffeoylquinic acid | y=70.087x-1247.2 | 1.60-2000.00 | 0.9999 | 0.48 | 1.45 | 0.86 | 1.26 | 97.56±1.04 |
| 5 | Hispidulin | y=636.33x+22250 | 1.60-2000.00 | 0.9967 | 0.49 | 1.48 | 1.94 | 2.16 | 98.63±1.29 |