Table S1. Summary of the samples of JQG

|  |  |  |
| --- | --- | --- |
| No. | Batch No. of JQG sample | Batch No. of extractum for preparation of JQG |
| S1 | 211115 | GF200403 |
| S2 | 211116 |
| S3 | 211117 |
| S4 | 211118 |
| S5 | 211119 |
| S6 | 211120 |
| S7 | 211122 |
| S8 | 211123 |
| S9 | 211124 |
| S10 | 211125 |
| S11 | 211126 |
| S12 | 211129 |
| S13 | 211130 |
| S14 | 211220 | GF210604 |
| S15 | 211221 |
| S16 | 211222 |
| S17 | 211223 |
| S18 | 211227 |
| S19 | 220104 |
| S20 | 220110 |

Table S2. The uniform design of DPJQG

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| No. | FT (g) | IF (g) | GF (g) | RR (g) | AR (g) | SR (g) | ASA (g) |
| N0 | 600 | 600 | 450 | 300 | 300 | 300 | 450 |
| N1 | 0 | 300 | 405 | 510 | 330 | 210 | 810 |
| N2 | 1200 | 900 | 270 | 390 | 600 | 240 | 495 |
| N3 | 180 | 0 | 135 | 360 | 420 | 480 | 315 |
| N4 | 900 | 780 | 810 | 0 | 360 | 180 | 225 |
| N5 | 960 | 1020 | 405 | 540 | 30 | 420 | 270 |
| N6 | 1080 | 540 | 90 | 150 | 120 | 450 | 765 |
| N7 | 1020 | 360 | 585 | 240 | 450 | 600 | 135 |
| N8 | 240 | 840 | 225 | 30 | 210 | 570 | 585 |
| N9 | 480 | 240 | 675 | 600 | 150 | 540 | 405 |
| N10 | 60 | 480 | 900 | 180 | 0 | 270 | 540 |
| N11 | 360 | 960 | 855 | 330 | 90 | 120 | 900 |
| N12 | 780 | 180 | 495 | 60 | 570 | 360 | 855 |
| N13 | 720 | 1140 | 855 | 420 | 390 | 510 | 720 |
| N14 | 1140 | 60 | 720 | 270 | 240 | 60 | 630 |
| N15 | 840 | 420 | 180 | 450 | 180 | 0 | 180 |
| N16 | 540 | 120 | 315 | 90 | 60 | 150 | 45 |
| N17 | 300 | 660 | 765 | 480 | 540 | 390 | 0 |
| N18 | 660 | 720 | 45 | 570 | 480 | 90 | 675 |
| N19 | 120 | 1080 | 540 | 120 | 510 | 30 | 360 |
| N20 | 420 | 1200 | 0 | 240 | 270 | 330 | 90 |

Table S3. Comparison of BP model parameters before and after GA.

|  |  |  |
| --- | --- | --- |
| Evaluating indicator | BPNN | GA-BPNN |
| SSE | 0.8606 | 0.3362 |
| MAE | 0.2796 | 0.2088 |
| MSE | 0.1434 | 0.0560 |
| RMSE | 0.3787 | 0.2367 |

Table S4. Precision, repeatability, and stability of the six investigated analytes (RSD, %, n = 6).

|  |  |  |  |
| --- | --- | --- | --- |
| Compounds | Precision | Repeatability | Stability |
| intra-day precision | inter-day precision |
| Mangiferin | 0.35% | 1.13% | 2.65% | 3.51% |
| 2′′-O-beta-L-Galactopyranosylorientin | 0.24% | 1.13% | 0.81% | 0.33% |
| Orientin | 0.24% | 0.50% | 0.48% | 0.47% |
| Veratric acid | 0.26% | 2.07% | 2.42% | 2.33% |
| Vitexin | 0.33% | 2.11% | 1.37% | 2.27% |
| Harpagoside | 0.53% | 1.60% | 1.67% | 1.71% |

Table S5. Recovery of the six investigated analytes (RSD, %, n = 6).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Compounds | Original (μg) | Spiked (μg) | Detected (μg) | Average recovery rate (%) | RSD (%) |
| Mangiferin | 28.46  | 31.80 | 59.82  | 98.78% | 2.30% |
| 28.54  | 59.79  |
| 28.43  | 61.01  |
| 28.49  | 60.01  |
| 28.46  | 58.77  |
| 28.51  | 59.94  |
| 2′′-O-beta-L-Galactopyranosylorientin | 202.4  | 196.7  | 402.5  | 101.42% | 1.06% |
| 203.0  | 402.9  |
| 202.2  | 402.9  |
| 202.6  | 403.6  |
| 202.4  | 402.5  |
| 202.8  | 398.1  |
| Orientin | 225.5  | 225.6 | 452.6  | 100.39% | 2.46% |
| 226.1  | 444.0  |
| 225.2  | 447.4  |
| 225.7  | 455.8  |
| 225.5  | 453.7  |
| 225.9  | 459.1  |
| Veratric acid | 21.04  | 21.45 | 42.75  | 100.34% | 1.88% |
| 21.11  | 43.28  |
| 21.02  | 42.68  |
| 21.06  | 42.18  |
| 21.04  | 42.25  |
| 21.08  | 42.34  |
| Vitexin | 64.63  | 66.72 | 130.6  | 100.51% | 2.51% |
| 64.82  | 130.5  |
| 64.56  | 134.8  |
| 64.69  | 131.2  |
| 64.63  | 131.3  |
| 64.76  | 132.1  |
| Harpagoside | 11.22  | 12.00  | 23.49  | 95.69% | 3.92% |
| 11.26  | 22.70  |
| 11.21  | 22.74  |
| 11.23  | 22.75  |
| 11.22  | 22.15  |
| 11.24  | 22.45  |

Table S6. RCF with three compounds as internal substances (AVE (RSD) ).

|  |  |
| --- | --- |
| Components to be measured | Internal substance |
| 2′′-O-beta-L-Galactopyranosylorientin | Orientin | Vitexin |
| Mangiferin | 0.855 (0.17%) | 1.216 (1.23%) | 1.241 (0.40%) |
| 2′′-O-beta-L-Galactopyranosylorientin | 1.000 (0.00%) | 1.422 (1.18%) | 1.452 (0.35%) |
| Orientin | 0.703 (1.18%) | 1.000 (0.00%) | 1.021 (0.90%) |
| Veratric acid | 0.326 (0.59%) | 0.464 (1.72%) | 0.473 (0.90%) |
| Vitexin | 0.689 (0.35%) | 0.980 (0.91%) | 1.000 (0.00%) |
| Harpagoside | 0.526 (3.00%) | 0.747 (2.11%) | 0.763 (2.84%) |

Table S7. The robustness test results of RCFs with 2′′-O-beta-L-Galactopyranosylorientin as the IS in JQG.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Factors | Analyte | Mangiferin | Orientin | Vitexin | Veratric acid | Harpagoside |
| Flow rate (mL/min) | 0.9 | 0.849  | 0.714  | 0.323  | 0.693  | 0.530  |
| 1.0 | 0.850  | 0.713  | 0.325  | 0.691  | 0.535  |
| 1.1 | 0.846  | 0.710  | 0.323  | 0.688  | 0.531  |
| Mean | 0.848  | 0.712  | 0.324  | 0.691  | 0.532  |
| ***RSD*** (%) | 0.26% | 0.33% | 0.37% | 0.42% | 0.48% |
| Column | Agilent Eclipse Plus C18 | 0.901  | 0.714  | 0.338  | 0.685  | 0.392  |
| Shimadzu InertSustain C18 | 0.937  | 0.711  | 0.339  | 0.652  | 0.400  |
| Agilent Zorbax SB-C18 | 0.905  | 0.720  | 0.340  | 0.695  | 0.395  |
| Mean | 0.914  | 0.715  | 0.339  | 0.677  | 0.396  |
| ***RSD*** (%) | 2.14% | 0.67% | 0.26% | 3.33% | 0.97% |
| Column temperature (℃) | 25 | 0.847  | 0.711  | 0.322  | 0.692  | 0.534  |
| 30 | 0.850  | 0.713  | 0.325  | 0.691  | 0.535  |
| 33 | 0.852  | 0.715  | 0.325  | 0.691  | 0.535  |
| Mean | 0.850  | 0.713  | 0.324  | 0.691  | 0.535  |
| ***RSD*** (%) | 0.25% | 0.27% | 0.43% | 0.06% | 0.11% |
| Instrument | Agilent1260 | 0.850  | 0.713  | 0.325  | 0.691  | 0.535  |
| Agilent1100 | 0.907  | 0.706  | 0.321  | 0.657  | 0.565  |
| Shimadzu SIL-20AC | 0.851  | 0.718  | 0.323  | 0.692  | 0.526  |
| Mean | 0.869  | 0.712  | 0.323  | 0.680  | 0.542  |
| ***RSD*** (%) | 3.74% | 0.85% | 0.69% | 2.91% | 3.77% |

Table S8. The robustness test results of RCFs with orientin as the IS in JQG.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Factors | Analyte | Mangiferin | 2′′-O-beta-L-Galactopyranosylorientin | Vitexin | Veratric acid | Harpagoside |
| Flow rate (mL/min) | 0.9 | 1.189  | 1.400  | 0.453  | 0.971  | 0.741  |
| 1.0 | 1.192  | 1.402  | 0.456  | 0.969  | 0.750  |
| 1.1 | 1.192  | 1.409  | 0.455  | 0.969  | 0.749  |
| Mean | 1.191  | 1.404  | 0.454  | 0.969  | 0.747  |
| ***RSD*** (%) | 0.12% | 0.33% | 0.35% | 0.12% | 0.61% |
| Column | Agilent Eclipse Plus C18 | 1.262  | 1.401  | 0.474  | 0.960  | 0.549  |
| Shimadzu InertSustain C18 | 1.317  | 1.407  | 0.477  | 0.917  | 0.562  |
| Agilent Zorbax SB-C18 | 1.256  | 1.388  | 0.472  | 0.965  | 0.549  |
| Mean | 1.278  | 1.399  | 0.474  | 0.947  | 0.553  |
| ***RSD*** (%) | 2.64% | 0.67% | 0.53% | 2.77% | 1.35% |
| Column temperature (℃) | 25 | 1.192  | 1.407  | 0.454  | 0.973  | 0.751  |
| 30 | 1.192  | 1.402  | 0.456  | 0.969  | 0.750  |
| 33 | 1.192  | 1.399  | 0.455  | 0.967  | 0.749  |
| Mean | 1.192  | 1.403  | 0.455  | 0.970  | 0.750  |
| ***RSD*** (%) | 0.02% | 0.27% | 0.22% | 0.32% | 0.15% |
| Instrument | Agilent1260 | 1.192  | 1.402  | 0.456  | 0.969  | 0.750  |
| Agilent1100 | 1.285  | 1.417  | 0.454  | 0.931  | 0.800  |
| Shimadzu SIL-20AC | 1.186  | 1.394  | 0.451  | 0.964  | 0.733  |
| Mean | 1.221  | 1.404  | 0.454  | 0.955  | 0.761  |
| ***RSD*** (%) | 4.55% | 0.85% | 0.58% | 2.14% | 4.62% |

Table S9. The robustness test results of RCFs with vitexin as the IS in JQG.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Factors | Analyte | Mangiferin | 2′′-O-beta-L-Galactopyranosylorientin | Orientin | Veratric acid | Harpagoside |
| Flow rate (mL/min) | 0.9 | 1.225  | 1.442  | 1.030  | 0.466  | 0.764  |
| 1.0 | 1.230  | 1.447  | 1.032  | 0.470  | 0.774  |
| 1.1 | 1.230  | 1.454  | 1.032  | 0.469  | 0.773  |
| Mean | 1.228  | 1.448  | 1.032  | 0.469  | 0.770  |
| ***RSD*** (%) | 0.24% | 0.42% | 0.12% | 0.46% | 0.72% |
| Column | Agilent Eclipse Plus C18 | 1.315  | 1.460  | 1.042  | 0.494  | 0.572  |
| Shimadzu InertSustain C18 | 1.336  | 1.534  | 1.090  | 0.520  | 0.613  |
| Agilent Zorbax SB-C18 | 1.302  | 1.438  | 1.036  | 0.489  | 0.569  |
| Mean | 1.317  | 1.477  | 1.056  | 0.501  | 0.584  |
| ***RSD*** (%) | 1.33% | 3.39% | 2.82% | 3.34% | 4.18% |
| Column temperature (℃) | 25 | 1.225  | 1.446  | 1.028  | 0.466  | 0.772  |
| 30 | 1.230  | 1.447  | 1.032  | 0.470  | 0.774  |
| 33 | 1.233  | 1.447  | 1.034  | 0.470  | 0.775  |
| Mean | 1.229  | 1.447  | 1.031  | 0.469  | 0.773  |
| ***RSD*** (%) | 0.31% | 0.06% | 0.32% | 0.49% | 0.17% |
| Instrument | Agilent1260 | 1.230  | 1.447  | 1.032  | 0.470  | 0.774  |
| Agilent1100 | 1.280  | 1.522  | 1.074  | 0.488  | 0.759  |
| Shimadzu SIL-20AC | 1.230  | 1.445  | 1.037  | 0.467  | 0.760  |
| Mean | 1.246  | 1.471  | 1.048  | 0.475  | 0.764  |
| ***RSD*** (%) | 2.30% | 2.96% | 2.16% | 2.33% | 1.08% |



**Figure S1** The cell viability under different concentrations of N0 (A), different concentrations of LPS (B), and 500 μg/mL DPJQG and 1 μg/mL LPS (C).



**Figure S2** Cell viability under different concentrations of mangiferin (A), 2′′-O-beta-L-Galactopyranosylorientin (B), orientin (C), veratric acid (D), vitexin (E), and harpagoside (F).



**Figure S3** Effect of six compounds on TNF-α levels (A) and IL-6 (B) in the supernatant of LPS-induced RAW 264.7 cells inflammation model (n = 3 data are expressed as the mean ± SEM. ####P < 0.001 contrast with the control group, \*\*\*\*P < 0.001 contrast with the model group).

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**Figure S4** Normal growing RAW 264.7 cells (A) and RAW 264.7 cells induced by LPS.