

Supplementary information

Table 1. The main macronutrients and micronutrients in fermented noni fruit juice (FNJ).

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Figure 1 The representative chromatogram of phytochemical compounds in FNJ.

Table 1. The main macronutrients and micronutrients in fermented noni fruit juice (FNJ).

| No. | Nutrient | Content (g/kg) |
|-----|---------------|-----------------------|
| 1 | Total protein | 5.90 |
| 2 | Glutamic acid | 0.48 |
| 3 | Aspartic acid | 0.59 |
| 4 | Threonine | 0.14 |
| 5 | Serine | 0.12 |
| 6 | Glycine | 0.18 |
| 7 | Alanine | 0.24 |
| 8 | Valine | 0.25 |
| 9 | Isoleucine | 0.18 |
| 10 | Leucine | 0.24 |
| 11 | Tyrosine | 0.13 |
| 12 | Phenylalanine | 0.12 |
| 13 | Lysine | 0.15 |
| 14 | Histidine | 0.03 |
| 15 | Arginine | 0.19 |
| 16 | Proline | 0.16 |
| 17 | K | 1.88 |
| 18 | Mg | 0.12 |
| 19 | Na | 0.15 |
| 20 | Ca | 0.05 |
| 21 | P | 0.25 |
| 22 | Fe | 3.33×10^{-3} |
| 23 | Mn | 1.22×10^{-3} |
| 24 | Zn | 0.64×10^{-3} |
| 25 | Cu | 0.09×10^{-3} |
| 26 | Se | 0.02×10^{-3} |
| 27 | Pb | 0.02×10^{-3} |
| 28 | Vitamin C | 3.76×10^{-3} |

Table 2. The main phytochemical compounds in FNJ.

| No. | compound | Formula | RT (min) |
|-----|--|----------------------|----------|
| 1 | 5-hydroxymethylfurfural | $C_6H_6O_3$ | 3.20 |
| 2 | 2-furoic acid | $C_5H_4O_3$ | 4.16 |
| 3 | 3,4-dihydroscopoletin | $C_{10}H_{10}O_4$ | 9.83 |
| 4 | 4-allyl-2-hydroxyphenyl 1-O- β -D-apiosyl-(1 \rightarrow 6)- β -D-glucopyranoside | $C_{20}H_{28}O_{11}$ | 15.14 |
| 5 | scopoletin | $C_{10}H_8O_4$ | 16.54 |
| 6 | cyclo(D-Trp-D-Tyr) | $C_{20}H_{19}N_3O_3$ | 18.76 |

| | | | |
|---|---|---|-------|
| 7 | hexahydropyrazino[1',2':1,6]pyrido[3,4-b]indole-1,4-dione | C ₁₄ H ₁₃ N ₃ O ₂ | 22.12 |
| 8 | cyclo(L-Trp-N-methyl-L-Ala-) | C ₁₄ H ₁₅ N ₃ O ₄ | 22.70 |

Table 3. The main nutrient compositions of db/db mouse diet.

| No. | composition | Content (%) |
|-----|---------------------|-------------|
| 1 | Moisture | ≤10.0 |
| 2 | Crude protein | ≥18.0 |
| 3 | Crude fat | ≥4.0 |
| 4 | Crude fiber | ≤5.0 |
| 5 | Crude ash | ≤8.0 |
| 6 | Calcium | 1.0-1.8 |
| 7 | Phosphorus | 0.6-1.2 |
| 8 | Calcium: Phosphorus | 1.2:1-1.7:1 |
| 9 | Lysine | ≥0.82 |
| 10 | Methionine | ≥0.53 |

Table 4. The qPCR primer sequences.

| Primer | Primer sequence (5' to 3') | Primer sequence (5' to 3') |
|----------------|----------------------------|-------------------------------|
| <i>Nrf2</i> -F | M-CAGCCATGACTGATTTAAGCAG | H-CCAGCACATCCAGTCAGAAACCAG |
| <i>Nrf2</i> -R | M-CAGCTGCTTGTTTTCGGTATTA | H-AGCCGAAGAAACCTCATTGTCATCTAC |
| <i>HO-1</i> -F | M-TCCTTGTACCATATCTACACGG | H-CCTCCCTGTACCACATCTATGT |
| <i>HO-1</i> -R | M-GAGACGCTTTACATAGTGCTGT | H-GCTCTTCTGGGAAGTAGACAG |
| <i>GPX1</i> -F | M-GTTTGAGAAGTGCGAAGTGAAT | H-CCCTCTGAGGCACCACGGT |
| <i>GPX1</i> -R | M-CGGAGACCAAATGATGTACTTG | H-TAAGCGCGGTGGCGTCGT |
| <i>JNK</i> -F | M-TTGAAAACAGGCCTAAATACGC | H-CCAGGACTGCAGGAACGAGT |
| <i>JNK</i> -R | M-GTTTGTTATGCTCTGAGTCAGC | H-CCACGTTTTCTTGTAGCCC |
| <i>IRS1</i> -F | M-GAGTTGAGTTGGGCAGAATAGG | H-CAGCTCACCTTCTGTCAGG |
| <i>IRS1</i> -R | M-CCTATCTGCATGGTCATGTAGT | H-AGGTCCATCTTCATGTACTCC |
| <i>AKT</i> -F | M-TGCACAAACGAGGGGAATATAT | H-TGACCATGAACGAGTTTGAGTA |
| <i>AKT</i> -R | M-CGTTCCCTGTAGCCAATAAAGG | H-GAGGATCTTCATGGCGTAGTAG |

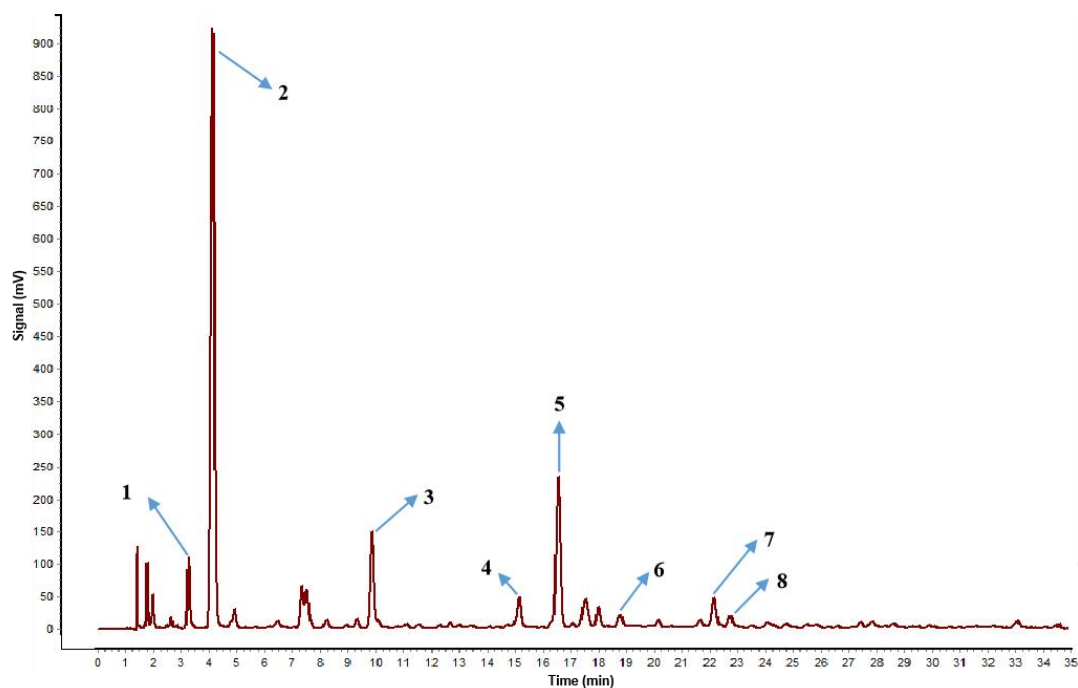


Figure 1 The representative chromatogram of phytochemical compounds in FNJ.

(1) 5-hydroxymethylfurfural. (2) 2-furoic acid. (3) 3,4-dihydroscopoletin. (4) 4-allyl-2-hydroxyphenyl 1-O- β -D-apiosyl-(1 \rightarrow 6)- β -D-glucopyranoside. (5) scopoletin. (6) cyclo (D-Trp-D-Tyr). (7) hexahydropyrazino [1',2':1,6] pyrido [3,4-b] indole-1,4-dione. (8) cyclo (L-Trp-N-methyl-L-Ala-).