

SUPPLEMENTARY MATERIAL

Strawberry, Blueberry, and Strawberry-Blueberry Blend Beverages Prevent Hepatic Steatosis in Obese Rats by Modulating Key Genes Involved in Lipid Metabolism

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Table S1. Primer sequences, annealing temperature, and NCBI reference sequence.

| Transcript | Sequence | Annealing temperature (T _m) | NCBI reference sequence |
|--------------|---|---|-------------------------|
| <i>Fasn</i> | Fw: CCATTTCCATTGCCCTTAGCC Rv: GTAACACATGCTGCTCAAACGA | 60 °C | NM_017332.2 |
| <i>Acaca</i> | Fw: AGGAAGATGGTGTCCGCTCTG Rv: GGGGAGATGTGCTGGGTCAT | 56 °C | NM_022193.2 |
| <i>Acadm</i> | Fw: GCAGAGAAGAAGGGTGATGAA Rv: ACCGCTGACCCATGTTTAG | 60 °C | NM_016986.2 |
| <i>Cpt1</i> | Fw: GATGCTTTGACAGGTGGTTTG Rv: CTTGTGGGCTTAGGGATGTT | 65 °C | XM_039102321.1 |
| <i>Cd36</i> | Fw: CTTGGATGTGGAACCCATAACT Rv: CAGGCCCAGGAGCTTTATTT | 60 °C | XM_039108092.1 |
| <i>Fatp5</i> | Fw: CCATTTCCATTGCCCTTAGCC Rv: AGTCCTGGATGAAATC | 60 °C | XM_008772501.3 |

Table S2. Urinary polyphenol metabolites and antioxidant capacity of high fat and fructose diet-fed rats supplemented with strawberry, blueberry, and strawberry-blueberry blend beverages.

| Tentative identification | Rt (min) | Molecular formula | Expected mass (Da) | Observed mass (Da) | Mass error (ppm) | Adduct | Concentration (μg/mg of creatinine) | | | | |
|-----------------------------------|----------|--|--------------------|--------------------|------------------|--------------------|-------------------------------------|-----------------------------|------------------------------|------------------------------|------------------------------|
| | | | | | | | SD | HFFD | HFFD+SB | HFFD+BB | HFFD+SBB |
| Benzoic acid metabolites | | | | | | | | | | | |
| Hippuric acid | 3.37 | C ₉ H ₉ NO ₃ | 179.0582 | 178.0504 | -3.4285 | [M-H] ⁻ | 0.051 ± 0.007 ^{bf} | 0.025 ± 0.004 ^b | 0.035 ± 0.006 ^{bf} | 0.096 ± 0.012 ^{af} | 0.043 ± 0.010 ^{bf} |
| Vanillic acid sulfate | 3.93 | C ₈ H ₈ O ₇ S | 247.9991 | 246.9929 | 4.3453 | [M-H] ⁻ | ND | ND | 0.040 ± 0.004 | ND | ND |
| Hydroxyhippuric acid | 4.96 | C ₉ H ₉ NO ₄ | 195.0532 | 194.0460 | 0.8356 | [M-H] ⁻ | ND | ND | 0.012 ± 0.002 | ND | ND |
| Cinnamic acid metabolites | | | | | | | | | | | |
| Caffeic acid glucuronide | 2.56 | C ₁₅ H ₁₆ O ₁₀ | 356.0743 | 355.0675 | 1.3356 | [M-H] ⁻ | ND | ND | 0.002 ± 0.000 ^a | 0.004 ± 0.001 ^a | ND |
| Ferulic acid sulfate | 2.88 | C ₁₀ H ₁₀ O ₇ S | 274.0147 | 273.0061 | -4.8980 | [M-H] ⁻ | ND | ND | 0.194 ± 0.082 ^a | 0.132 ± 0.020 ^a | 0.044 ± 0.004 ^a |
| Coumaric acid sulfate | 3.12 | C ₉ H ₈ O ₆ S | 244.0042 | 242.9963 | -2.4014 | [M-H] ⁻ | ND | ND | 0.022 ± 0.002 | ND | ND |
| Caffeic acid sulfate | 3.80 | C ₉ H ₈ O ₇ S | 259.9991 | 258.9917 | -0.3509 | [M-H] ⁻ | ND | ND | 0.025 ± 0.002 ^a | 0.005 ± 0.000 ^a | ND |
| Dihydrocoumaric acid | 3.81 | C ₉ H ₁₀ O ₃ | 166.0630 | 165.0555 | -1.2603 | [M-H] ⁻ | ND | ND | 0.116 ± 0.009 ^a | 0.036 ± 0.007 ^a | ND |
| Coumaric acid | 4.23 | C ₉ H ₈ O ₃ | 164.0473 | 163.0397 | -2.2924 | [M-H] ⁻ | 0.015 ± 0.001 ^{bf} | 0.005 ± 0.001 ^c | 0.018 ± 0.001 ^{af} | 0.008 ± 0.001 ^{df} | 0.011 ± 0.002 ^{cf} |
| Dimethylelagic acid | 9.35 | C ₁₆ H ₁₀ O ₈ | 330.0376 | 329.0318 | 4.5590 | [M-H] ⁻ | ND | ND | 0.011 ± 0.001 | ND | ND |
| Ellagitannin metabolites | | | | | | | | | | | |
| Dimethylurolithin D sulfate | 3.53 | C ₁₅ H ₁₂ O ₉ S | 368.0202 | 367.0136 | 1.8186 | [M-H] ⁻ | ND | ND | 0.004 ± 0.001 | ND | ND |
| Methylurolithin D glucuronide | 3.77 | C ₂₁ H ₂₂ O ₁₁ | 450.1162 | 449.1098 | 2.0200 | [M-H] ⁻ | ND | ND | 0.086 ± 0.0006 | ND | ND |
| Urolithin C | 4.71 | C ₁₃ H ₈ O ₅ | 244.0372 | 243.0300 | 0.3044 | [M-H] ⁻ | ND | ND | 0.196 ± 0.011 | ND | ND |
| Methylurolithin A | 5.18 | C ₁₄ H ₁₀ O ₄ | 242.0579 | 241.0503 | -1.3359 | [M-H] ⁻ | ND | ND | 0.026 ± 0.004 | ND | ND |
| Urolithin B glucuronide | 6.62 | C ₁₉ H ₁₆ O ₉ | 388.0794 | 387.0738 | 4.1636 | [M-H] ⁻ | ND | ND | 2.910 ± 0.171 | ND | ND |
| Urolithin A | 9.32 | C ₁₃ H ₈ O ₄ | 228.0423 | 227.0347 | -1.0854 | [M-H] ⁻ | ND | ND | 8.251 ± 0.496 ^a | ND | 2.326 ± 0.246 ^b |
| Urolithin B | 11.20 | C ₁₃ H ₈ O ₃ | 212.0473 | 211.0404 | 1.4379 | [M-H] ⁻ | ND | ND | 5.936 ± 0.416 ^a | ND | 1.816 ± 0.140 ^a |
| Flavanol metabolites | | | | | | | | | | | |
| (Epi)-catechin glucuronide | 1.14 | C ₂₁ H ₂₂ O ₁₂ | 466.1111 | 465.1033 | -1.2718 | [M-H] ⁻ | ND | ND | ND | 0.013 ± 0.000 ^a | 0.010 ± 0.004 ^a |
| Methyl-(epi)-catechin glucuronide | 2.94 | C ₂₂ H ₂₄ O ₁₂ | 480.1268 | 479.1196 | 0.2521 | [M-H] ⁻ | 0.002 ± 0.000 ^{ab†} | 0.002 ± 0.000 ^b | 0.044 ± 0.007 ^{ab†} | 0.055 ± 0.004 ^{af} | 0.051 ± 0.006 ^{af} |
| Flavonol metabolites | | | | | | | | | | | |
| Dimethyl quercetin | 11.12 | C ₁₇ H ₁₄ O ₇ | 330.0740 | 329.0681 | 4.2260 | [M-H] ⁻ | 0.312 ± 0.025 ^{af} | 0.197 ± 0.034 ^{ab} | 0.313 ± 0.022 ^{af} | 0.084 ± 0.007 ^{bf} | 0.212 ± 0.019 ^{ab} |
| Flavone metabolites | | | | | | | | | | | |
| Apigenin diglucuronide | 2.94 | C ₂₇ H ₂₆ O ₁₇ | 622.1170 | 621.1094 | -0.5710 | [M-H] ⁻ | 0.027 ± 0.004 ^{af} | 0.005 ± 0.002 ^b | 0.024 ± 0.002 ^{ab†} | 0.026 ± 0.002 ^{af} | 0.026 ± 0.002 ^{ab†} |
| Apigenin glucuronide | 4.44 | C ₂₁ H ₁₈ O ₁₁ | 446.0849 | 445.0757 | -4.3859 | [M-H] ⁻ | 7.378 ± 0.570 ^{ab} | 6.371 ± 1.234 ^b | 9.137 ± 0.298 ^{af} | 6.744 ± 1.075 ^b | 7.766 ± 0.909 ^{ab†} |
| Gallic acid metabolites | | | | | | | | | | | |
| Methylpyrogallol sulfate | 3.77 | C ₇ H ₈ O ₆ S | 220.0042 | 218.9965 | -1.7285 | [M-H] ⁻ | ND | ND | 0.006 ± 0.001 | ND | ND |
| Isoflavone metabolites | | | | | | | | | | | |
| Dihydrodaidzein glucuronide | 4.24 | C ₂₁ H ₂₀ O ₁₀ | 432.1056 | 431.0965 | -4.2433 | [M-H] ⁻ | 0.403 ± 0.022 ^b | 0.379 ± 0.099 ^b | 0.480 ± 0.020 ^{ab} | 0.531 ± 0.090 ^{af} | 0.483 ± 0.031 ^{ab} |
| Dihydrodaidzein | 4.67 | C ₁₅ H ₁₂ O ₄ | 256.0736 | 255.0664 | 0.5466 | [M-H] ⁻ | 0.014 ± 0.001 ^{af} | 0.005 ± 0.001 ^b | 0.013 ± 0.001 ^{af} | 0.011 ± 0.002 ^{ab†} | 0.013 ± 0.002 ^{ab†} |
| Genistein glucuronide | 5.20 | C ₂₁ H ₁₈ O ₁₁ | 446.0849 | 445.0760 | -3.7303 | [M-H] ⁻ | 0.631 ± 0.020 ^a | 0.473 ± 0.093 ^{ab} | 0.437 ± 0.015 ^{ab} | 0.416 ± 0.054 ^{ab} | 0.432 ± 0.020 ^b |
| Glicytein glucuronide | 5.52 | C ₂₂ H ₂₀ O ₁₁ | 460.1006 | 459.0916 | -3.7453 | [M-H] ⁻ | 2.374 ± 0.763 ^{ab} | 2.553 ± 0.356 ^b | 2.680 ± 0.278 ^{ab} | 3.064 ± 0.374 ^{ab†} | 3.169 ± 0.131 ^{af} |
| Equol glucuronide | 5.69 | C ₂₁ H ₂₂ O ₉ | 418.1264 | 417.1173 | -4.3003 | [M-H] ⁻ | 12.105 ± 0.583 ^a | 9.953 ± 1.917 ^a | 10.587 ± 0.691 ^a | 9.586 ± 1.650 ^a | 9.520 ± 1.838 ^a |
| Hydroxyequol | 8.13 | C ₁₅ H ₁₄ O ₄ | 258.0892 | 257.0808 | -4.3725 | [M-H] ⁻ | 0.018 ± 0.001 ^{af} | 0.011 ± 0.001 ^{bf} | 0.015 ± 0.003 ^{ab†} | 0.013 ± 0.001 ^{ab†} | 0.026 ± 0.040 ^{ab†} |
| Hydroxyglycitein | 8.59 | C ₁₆ H ₁₂ O ₆ | 300.0634 | 299.0552 | -3.0659 | [M-H] ⁻ | 0.042 ± 0.002 ^{af} | 0.032 ± 0.003 ^b | 0.037 ± 0.002 ^{ab†} | 0.038 ± 0.003 ^{ab†} | 0.034 ± 0.004 ^b |
| Hydroxygenistein | 9.16 | C ₁₅ H ₁₀ O ₆ | 286.0477 | 285.0396 | -2.9990 | [M-H] ⁻ | 0.011 ± 0.001 ^{a†} | 0.008 ± 0.001 ^b | 0.008 ± 0.001 ^{ab} | 0.011 ± 0.002 ^a | 0.011 ± 0.002 ^{ab†} |
| Equol | 11.22 | C ₁₅ H ₁₄ O ₃ | 242.0943 | 241.0862 | -3.3874 | [M-H] ⁻ | 0.051 ± 0.003 ^{af} | 0.032 ± 0.003 ^b | 0.037 ± 0.002 ^{ab} | 0.040 ± 0.005 ^{ab†} | 0.037 ± 0.004 ^{bf} |
| Methylequol | 11.42 | C ₁₆ H ₁₆ O ₄ | 272.1049 | 271.0976 | 0.1402 | [M-H] ⁻ | 0.004 ± 0.001 ^{af} | 0.003 ± 0.000 ^b | 0.003 ± 0.000 ^{ab†} | 0.004 ± 0.001 ^{ab†} | 0.003 ± 0.000 ^{af} |
| Hydroxydaidzein | 11.62 | C ₁₅ H ₁₀ O ₅ | 270.0528 | 269.0451 | -1.7580 | [M-H] ⁻ | 12.948 ± 1.043 ^{bc} | 11.437 ± 2.001 ^c | 12.847 ± 1.431 ^{bc} | 14.747 ± 2.123 ^{bf} | 17.477 ± 1.764 ^{af} |
| Lignans | | | | | | | | | | | |
| Enterodiol | 9.09 | C ₁₈ H ₂₂ O ₄ | 302.1518 | 301.1458 | 4.1634 | [M-H] ⁻ | ND | ND | 0.016 ± 0.001 ^{ab} | 0.007 ± 0.003 ^b | 0.027 ± 0.003 ^a |
| Enterolactone sulfate | 9.89 | C ₁₈ H ₁₈ O ₇ S | 378.0773 | 377.0705 | 1.2812 | [M-H] ⁻ | 0.234 ± 0.006 ^{ab} | 0.153 ± 0.013 ^{ab} | 0.349 ± 0.018 ^{ab} | 0.084 ± 0.011 ^b | 0.102 ± 0.009 ^{ab} |

| | | | | | | | | | | | |
|--|-------|--|----------|----------|---------|--------------------|-------------------------------|-----------------------------|------------------------------|------------------------------|------------------------------|
| Enterolactone | 11.18 | C ₁₈ H ₁₈ O ₄ | 298.1205 | 297.1132 | -0.1737 | [M-H] ⁻ | 4.262 ± 0.193 ^{ab†} | 2.983 ± 0.300 ^b | 3.120 ± 0.246 ^b | 9.023 ± 0.443 ^{a†} | 7.597 ± 1.055 ^{a†} |
| <i>Other polyphenols</i> | | | | | | | | | | | |
| Catechol sulfate | 2.22 | C ₆ H ₆ O ₅ S | 189.9936 | 188.9858 | -2.8666 | [M-H] ⁻ | ND | ND | 0.305 ± 0.024 | ND | ND |
| Catechol | 2.38 | C ₆ H ₆ O ₂ | 110.0368 | 109.0297 | 2.1231 | [M-H] ⁻ | ND | ND | 0.012 ± 0.001 | ND | ND |
| <i>Phenylacetic acid metabolites</i> | | | | | | | | | | | |
| Hydroxyphenylacetic acid | 2.75 | C ₈ H ₈ O ₃ | 152.0473 | 151.0394 | -4.4361 | [M-H] ⁻ | ND | ND | 0.089 ± 0.007 ^a | 0.079 ± 0.008 ^a | ND |
| Methoxyphenylacetic acid | 4.55 | C ₉ H ₁₀ O ₃ | 166.0630 | 165.0555 | -1.0746 | [M-H] ⁻ | 0.154 ± 0.010 ^{ab} | 0.136 ± 0.023 ^{ab} | 0.37 ± 0.009 ^{ab†} | 0.064 ± 0.007 ^{a†} | 0.268 ± 0.041 ^{b†} |
| <i>Phenylpropanoic acid metabolites</i> | | | | | | | | | | | |
| Dihydroferulic acid sulfate | 3.47 | C ₁₀ H ₁₂ O ₇ S | 276.0304 | 275.0223 | -2.7228 | [M-H] ⁻ | 0.053 ± 0.005 ^{a†} | 0.016 ± 0.005 ^d | 0.021 ± 0.003 ^{cd} | 0.026 ± 0.003 ^{c†} | 0.042 ± 0.005 ^{b†} |
| Phenylpropionic acid | 4.39 | C ₉ H ₁₀ O ₂ | 150.0681 | 149.0607 | -0.4333 | [M-H] ⁻ | ND | ND | 0.030 ± 0.003 | ND | ND |
| Dihydroferulic acid | 5.00 | C ₁₀ H ₁₂ O ₄ | 196.0736 | 195.0662 | -0.4924 | [M-H] ⁻ | ND | ND | 0.085 ± 0.006 | ND | ND |
| <i>Phenylvaleric acid metabolites</i> | | | | | | | | | | | |
| Dihydroxyphenylvaleric acid | 3.93 | C ₁₁ H ₁₄ O ₄ | 210.0892 | 209.0823 | 1.9848 | [M-H] ⁻ | ND | ND | 0.045 ± 0.002 ^b | 0.133 ± 0.010 ^a | ND |
| Dihydroxyphenylvaleric acid sulfate | 10.98 | C ₁₁ H ₁₄ O ₇ S | 290.0460 | 289.0388 | 0.2431 | [M-H] ⁻ | 0.027 ± 0.004 ^{bcd†} | 0.012 ± 0.004 ^d | 0.054 ± 0.004 ^{ab†} | 0.051 ± 0.005 ^{bc†} | 0.022 ± 0.003 ^{cd†} |
| <i>Valerolactone metabolites</i> | | | | | | | | | | | |
| Dihydroxyphenylvalerolactone sulfate | 3.18 | C ₁₁ H ₁₂ O ₇ S | 288.0304 | 287.0238 | 2.3654 | [M-H] ⁻ | ND | ND | 0.259 ± 0.018 ^a | 0.212 ± 0.029 ^{ab} | 0.121 ± 0.013 ^b |
| Dihydroxyphenylvalerolactone | 3.24 | C ₁₁ H ₁₂ O ₄ | 208.0736 | 207.0672 | 4.3184 | [M-H] ⁻ | ND | ND | 0.055 ± 0.005 ^{ab} | 0.142 ± 0.035 ^a | 0.047 ± 0.009 ^b |
| Methoxyhydroxyphenylvalerolactone | 11.43 | C ₁₂ H ₁₄ O ₄ | 222.0892 | 221.0819 | 0.0663 | [M-H] ⁻ | 1.898 ± 0.108 ^a | 1.745 ± 0.140 ^a | 1.652 ± 0.059 ^{ab†} | 1.201 ± 0.097 ^{b†} | 0.676 ± 0.039 ^{b†} |
| Urinary antioxidant capacity | | | | | | | | | | | |
| Folin-Ciocalteu reducing capacity assay (mg GAE/mg creatinine) | | | | | | | 1.2 ± 0.4 ^b | 0.8 ± 0.4 ^b | 0.8 ± 0.3 ^b | 2.3 ± 0.7 ^a | 0.9 ± 0.5 ^b |
| DPPH [•] radical scavenging assay (mg TE/mg creatinine) | | | | | | | 4.8 ± 2.4 ^b | 1.8 ± 0.4 ^c | 2.3 ± 0.9 ^{bc} | 8.3 ± 2.4 ^a | 3.8 ± 1.8 ^{bc} |
| ABTS [•] radical scavenging assay (mg TE/mg creatinine) | | | | | | | 2.8 ± 1.7 ^b | 1.7 ± 0.9 ^b | 6.1 ± 3.0 ^a | 5.7 ± 2.9 ^a | 4.0 ± 2.9 ^a |

Data are showed as mean ± standard deviation of ten replicates. Different letters indicate significant ($p < 0.05$) differences between samples by Tukey's or Friedman's test. †Indicate significant ($p < 0.05$) difference as compared to the HFFD group by Dunnet's or Wilcoxon test. SD: standard diet; HFFD: high fat and fructose diet; SB: strawberry beverage; BB: blueberry beverage; SBB: strawberry-blueberry beverage; DPPH: 2,2-diphenyl-1-picrylhydrazyl; ABTS: 2,2'-azino-bis(3-ethylbenzo-thiazoline-6-sulfonic acid); GAE: gallic acid equivalent; TE: trolox equivalent; Trolox: 6-hydroxy-2,5,7,8-tetramethylchroman-2-carboxylic acid.

Table S3. Top 25 loading values of component 1 from the sparse Partial Least Square-Discriminant Analysis of urinary polyphenol metabolites of high fat and fructose diet-fed rats supplemented with strawberry, blueberry, and strawberry-blueberry blend beverages.

| Urinary metabolites | Loadings 1 | |
|--------------------------------------|-------------|-------------|
| | Component 1 | Component 2 |
| Catechol sulfate | 0.2710 | 0 |
| Urolithin B glucuronide | 0.2696 | 0 |
| Urolithin C | 0.2694 | 0 |
| Dihydroferulic acid | 0.2689 | 0 |
| Methylurolithin A | 0.2658 | 0 |
| Methylpyrogallol sulfate | 0.2656 | 0 |
| Hydroxyhippuric acid | 0.2656 | 0 |
| Caffeic acid sulfate | 0.2526 | 0 |
| Methylurolithin D glucuronide | 0.2237 | 0 |
| Vanillic acid sulfate | 0.2207 | 0 |
| Catechol | 0.2197 | 0 |
| Dimethylelagic acid | 0.2189 | 0 |
| Urolithin A | 0.2034 | 0.0769 |
| Dihydrocoumaric acid | 0.1923 | 0 |
| Hydroxydaidzein | 0.1794 | 0 |
| Phenylpropionic acid | 0.1640 | 0 |
| Dimethylurolithin D sulfate | 0.1639 | 0 |
| Coumaric acid sulfate | 0.1601 | 0 |
| Urolithin B | 0.1524 | 0.0654 |
| Enterolactone | 0.1137 | 0.2547 |
| Hydroxyphenylacetic acid | 0.0986 | 0.0184 |
| Dihydroxyphenylvalerolactone sulfate | 0.0450 | 0.2139 |
| Enterolactone sulfate | 0.0249 | 0.0526 |
| Ferulic acid sulfate | 0.0087 | 0.1636 |
| Methoxyphenylacetic acid | 0.0041 | 0 |

Data was normalized by sum, square root transformed, and auto scaled.

Table S4. Top 25 loading values of component 2 from the sparse Partial Least Square-Discriminant Analysis of urinary polyphenol metabolites of high fat and fructose diet-fed rats supplemented with strawberry, blueberry, and strawberry-blueberry blend beverages.

| Urinary metabolites | Loadings 1 | |
|--------------------------------------|-------------|-------------|
| | Component 1 | Component 2 |
| Methyl-(epi)-catechin glucuronide | 0 | 0.4208 |
| Methoxyhydroxyphenylvalerolactone | 0 | 0.3746 |
| Equol glucuronide | 0 | 0.3099 |
| Dimethyl quercetin | 0 | 0.3034 |
| Dihydroxyphenylvalerolactone | 0 | 0.2936 |
| Hydroxyglycitein | 0 | 0.2594 |
| Enterolactone | 0.1137 | 0.2547 |
| (Epi)-catechin glucuronide | 0 | 0.2362 |
| Enterodiol | 0 | 0.2338 |
| Dihydroxyphenylvalerolactone sulfate | 0.0450 | 0.2139 |
| Apigenin glucuronide | 0 | 0.2123 |
| Ferulic acid sulfate | 0.0087 | 0.1636 |
| Dihydroxyphenylvaleric acid | 0 | 0.1463 |
| Dihydrodaidzein glucuronide | 0 | 0.0938 |
| Urolithin A | 0.2034 | 0.0769 |
| Urolithin B | 0.1524 | 0.0654 |
| Glicytein glucuronide | 0 | 0.0545 |
| Enterolactone sulfate | 0.0249 | 0.0526 |
| Caffeic acid glucuronide | 0 | 0.0470 |
| Dihydroferulic acid sulfate | 0 | 0.0448 |
| Dihydroxyphenylvaleric acid sulfate | 0 | 0.0382 |
| Coumaric acid | 0 | 0.0269 |
| Hydroxyphenylacetic acid | 0.0986 | 0.0184 |
| Equol | 0 | 0.0112 |
| Methylequol | 0 | 0.0097 |

Data was normalized by sum, square root transformed, and auto scaled.

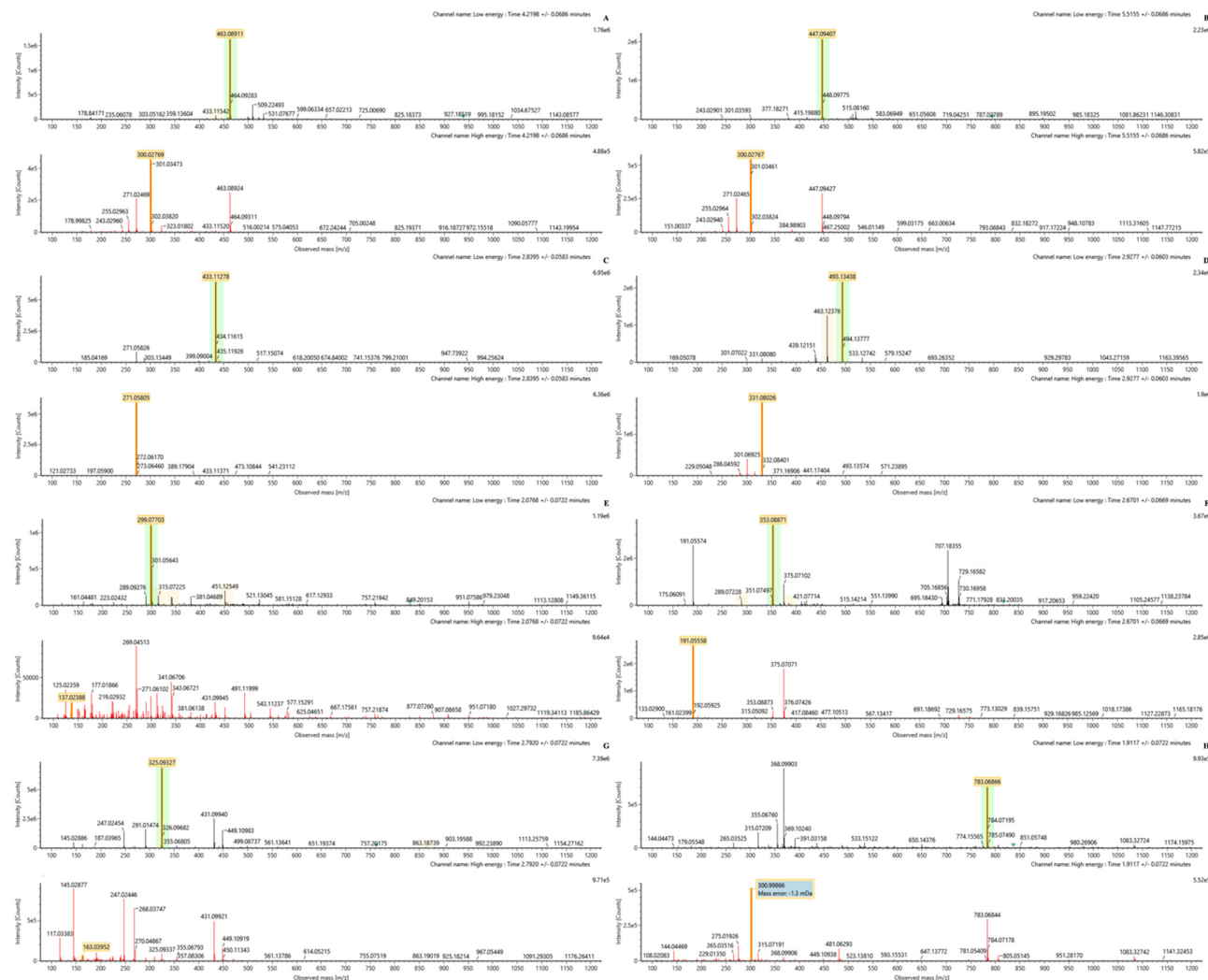


Figure S1. High resolution MS^E spectra at high (superior) and low (inferior) collision energy of the major polyphenols identified in berry fruit beverages: (A) myricetin rhamnoside, (B) quercetin rhamnoside, (C) pelargonidin hexoside, (D) malvidin hexoside, (E) hydroxybenzoic acid hexoside, (F) caffeoylquinic acid isomer II, (G) coumaric acid hexoside, and (H) peduncalagin.