

**Supplementary Table ST.9. Hippurate-associated phenylpropanoid modules' distribution over enterotypes (N=271).** The statistical difference over the four enterotypes was tested using a non-parametric Kruskal-Wallis test (two-sided testing and adjusted for multiple testing (AdjP, BH method), followed by post hoc Dunn tests for pairwise differences).

| X           | Y      | Kruskal-Wallis ChiSquare | DF | Kruskal-Wallis P | Adj PValue | Level | Level2 | Score Mean Difference | Std Err Dif | Z         | Effect size (r) | p-value  | N   |
|-------------|--------|--------------------------|----|------------------|------------|-------|--------|-----------------------|-------------|-----------|-----------------|----------|-----|
| Enterotypes | MC0004 | 40.03616                 | 3  | 1.05E-08         | 2.09E-08   | Rum   | Bact2  | 92.946759             | 16.69416    | 5.56762   | 0.45921         | 1.55E-07 | 147 |
| Enterotypes | MC0004 | 40.03616                 | 3  | 1.05E-08         | 2.09E-08   | Prev  | Bact2  | 76.446759             | 18.36292    | 4.163106  | 0.45696         | 0.000188 | 83  |
| Enterotypes | MC0004 | 40.03616                 | 3  | 1.05E-08         | 2.09E-08   | Rum   | Bact1  | 49.886029             | 11.89631    | 4.193403  | 0.305835        | 0.000165 | 188 |
| Enterotypes | MC0004 | 40.03616                 | 3  | 1.05E-08         | 2.09E-08   | Prev  | Bact1  | 33.386029             | 14.14298    | 2.360608  | 0.211989        | 0.10947  | 124 |
| Enterotypes | MC0004 | 40.03616                 | 3  | 1.05E-08         | 2.09E-08   | Rum   | Prev   | 16.482143             | 12.68382    | 1.299462  | 0.097951        | 1        | 176 |
| Enterotypes | MC0004 | 40.03616                 | 3  | 1.05E-08         | 2.09E-08   | Bact2 | Bact1  | -43.04602             | 17.82805    | -2.414511 | -0.247724       | 0.094538 | 95  |
| Enterotypes | MC0005 | 22.247132                | 3  | 5.79E-05         | 5.79E-05   | Rum   | Bact2  | 75.299074             | 16.54971    | 4.549872  | 0.375267        | 3.22E-05 | 147 |
| Enterotypes | MC0005 | 22.247132                | 3  | 5.79E-05         | 5.79E-05   | Prev  | Bact2  | 60.800265             | 18.20402    | 3.339935  | 0.366606        | 0.005028 | 83  |
| Enterotypes | MC0005 | 22.247132                | 3  | 5.79E-05         | 5.79E-05   | Rum   | Bact1  | 27.472549             | 11.79337    | 2.32949   | 0.169896        | 0.118999 | 188 |
| Enterotypes | MC0005 | 22.247132                | 3  | 5.79E-05         | 5.79E-05   | Rum   | Prev   | 14.480952             | 12.57407    | 1.151652  | 0.086809        | 1        | 176 |
| Enterotypes | MC0005 | 22.247132                | 3  | 5.79E-05         | 5.79E-05   | Prev  | Bact1  | 12.973739             | 14.0206     | 0.925334  | 0.083097        | 1        | 124 |
| Enterotypes | MC0005 | 22.247132                | 3  | 5.79E-05         | 5.79E-05   | Bact2 | Bact1  | -47.81182             | 17.67379    | -2.705238 | -0.277552       | 0.040953 | 95  |