

Supplementary Table SV. Cochran's Q test and MR-Egger regression analysis for human blood metabolites and gastric cancer risk (Data from Open GWAS database; The metabolites labeled red show heterogeneity or multivalidity)

| Metabolites | Cochran's Q test | | MR-Egger regression analysis | |
|--|------------------|------|------------------------------|------|
| | Q | P | Intercept | P |
| Cortisol | 13.60 | 0.85 | 0.02 | 0.33 |
| Glutamate | 16.50 | 0.68 | -0.01 | 0.75 |
| 2-linoleoylglycerol (18:2) | 19.15 | 0.64 | 0.01 | 0.48 |
| Alpha-ketoglutarate to succinate ratio | 11.91 | 0.89 | -0.01 | 0.68 |
| Carotene diol (1) | 41.23 | 0.13 | -0.002 | 0.92 |
| X-24588 | 33.69 | 0.48 | -0.004 | 0.63 |
| Glucuronate to etiocholanolone glucuronide ratio | 16.08 | 0.89 | -0.02 | 0.23 |
| Nicotinamide | 23.21 | 0.45 | 0.003 | 0.87 |
| Heneicosapentaenoate (21:5n3) | 18.77 | 0.28 | -0.01 | 0.36 |
| Histidine to asparagine ratio | 13.69 | 0.94 | -0.0001 | 0.99 |
| X-25810 | 22.22 | 0.95 | 0.003 | 0.71 |
| N,N-dimethylalanine | 22.27 | 0.56 | -0.04 | 0.10 |
| X-12101 | 19.42 | 0.68 | 0.02 | 0.20 |
| Trans-urocanate | 27.97 | 0.08 | -0.01 | 0.40 |
| 4-hydroxyphenylpyruvate | 15.82 | 0.82 | 0.004 | 0.82 |
| Isoleucine to phosphate ratio | 27.07 | 0.41 | -0.01 | 0.72 |
| O-sulfo-l-tyrosine | 30.80 | 0.20 | 0.001 | 0.94 |
| X-25265 | 22.98 | 0.63 | -0.01 | 0.61 |
| Leucine to phosphate ratio | 24.25 | 0.45 | 0.01 | 0.71 |
| 2'-o-methyluridine | 15.31 | 0.70 | -0.003 | 0.74 |
| Umbelliferone sulfate | 27.05 | 0.25 | 0.02 | 0.10 |
| Carotene diol (2) | 22.03 | 0.40 | -0.004 | 0.85 |
| Aspartate to asparagine ratio | 24.43 | 0.18 | 0.01 | 0.53 |
| 1-dihomo-linolenylglycerol (20:3) | 32.85 | 0.08 | -0.01 | 0.58 |
| Sphingomyelin (d18:1/24:1, d18:2/24:0) | 18.16 | 0.31 | 0.04 | 0.19 |
| Glycodeoxycholate 3-sulfate | 35.16 | 0.32 | 0.01 | 0.52 |
| Glucuronate | 20.09 | 0.17 | 0.01 | 0.67 |
| 4-methoxyphenol sulfate | 12.82 | 0.85 | 0.01 | 0.40 |

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|---|-------|------|--------|------|
| Hydroxy-cmpf | 19.05 | 0.52 | 0.01 | 0.30 |
| Cortisone to 4-cholesten-3-one ratio | 25.05 | 0.77 | -0.01 | 0.20 |
| 5alpha-androstan-3alpha,17alpha-diol monosulfate | 23.30 | 0.72 | 0.002 | 0.75 |
| X-12306 | 27.49 | 0.55 | 0.01 | 0.74 |
| Retinol (Vitamin A) | 19.84 | 0.84 | 0.002 | 0.89 |
| X-12544 | 21.99 | 0.40 | -0.02 | 0.27 |
| X-22771 | 12.01 | 0.80 | 0.01 | 0.51 |
| Adenosine 5'-diphosphate (ADP) to flavin adenine dinucleotide (FAD) ratio | 39.70 | 0.03 | -0.002 | 0.90 |
| 5-methyluridine (ribothymidine) | 29.20 | 0.35 | -0.01 | 0.52 |
| X-15728 | 20.12 | 0.95 | -0.02 | 0.13 |
| 3-carboxy-4-methyl-5-propyl-2-furanpropanoate (cmpf) | 17.13 | 0.45 | 0.04 | 0.18 |
| Prolylglycine | 20.02 | 0.89 | 0.003 | 0.79 |
| Alanine to asparagine ratio | 34.21 | 0.46 | 0.001 | 0.88 |
| N-acetylproline | 16.21 | 0.64 | 0.02 | 0.45 |
| X-24328 | 39.07 | 0.38 | -0.01 | 0.14 |
| Threonine | 36.76 | 0.22 | -0.002 | 0.87 |
| 1-stearoyl-GPE (18:0) | 45.72 | 0.18 | -0.01 | 0.31 |
| 7-methylxanthine | 32.40 | 0.09 | -0.03 | 0.28 |
| 2-hydroxy-4-(methylthio)butanoic acid | 27.83 | 0.32 | -0.01 | 0.16 |
| X-11315 | 22.31 | 0.62 | -0.01 | 0.54 |
| Tetradecadienedioate (C14:2-DC) | 20.02 | 0.79 | 0.003 | 0.81 |
| X-25271 | 11.31 | 0.88 | -0.01 | 0.63 |
| Paraxanthine to linoleate (18:2n6) ratio | 16.49 | 0.56 | 0.02 | 0.48 |