

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

Metabolites	Cochran's Q test		MR-Egger regression analysis	
	Q	P	Intercept	P
1-palmitoleoyl-2-linolenoyl-GPC (16:1/18:3)	12.35	0.72	-0.01	0.58
1-arachidonylglycerol (20:4)	19.44	0.49	-0.03	0.04
Oleoyl-linoleoyl-glycerol (18:1 to 18:2) to linoleoyl-arachidonoyl-glycerol (18:2 to 20:4) ratio	17.32	0.63	0.003	0.70
X-19299	8.18	0.83	-0.004	0.78
7-methylguanine	11.91	0.89	-0.01	0.51
1-(1-enyl-palmitoyl)-GPC (p-16:0)	33.61	0.09	-0.003	0.84
1-arachidonoyl-GPE (20:4n6)	44.85	0.04	0.004	0.72
1-palmitoyl-2-arachidonoyl-gpc (16:0/20:4n6)	22.98	0.63	-0.02	0.01
Eicosenoate (20:1)	17.58	0.29	0.01	0.83
Argininate	22.57	0.37	0.01	0.43
Eicosenoylcarnitine (C20:1)	28.24	0.30	-0.01	0.46
Sphingomyelin (d17:1/16:0, d18:1/15:0, d16:1/17:0)	15.00	0.82	-0.01	0.54
Sphingomyelin (d18:1/22:1, d18:2/22:0, d16:1/24:1)	13.84	0.61	-0.004	0.81
1-stearoyl-2-arachidonoyl-gpc (18:0/20:4)	34.34	0.23	-0.02	0.02
Adenosine 5'-diphosphate (ADP) to glutamate ratio	26.59	0.38	0.01	0.59
1-(1-enyl-palmitoyl)-2-arachidonoyl-gpc (p-16:0/20:4)	30.39	0.45	-0.004	0.66
Sphingomyelin (d17:2/16:0, d18:2/15:0)	18.62	0.67	-0.002	0.87
Heptenedioate (C7:1-DC)	11.52	0.64	-0.01	0.51
Dihomo-linoleate (20:2n6)	13.72	0.39	0.02	0.26
N-acetyl-aspartyl-glutamate (naag)	15.46	0.35	0.02	0.27
Ethyl beta-glucopyranoside	7.36	0.88	0.01	0.62
Serine	28.69	0.63	0.002	0.88
Homoarginine	22.94	0.46	0.01	0.27

X-17690	23.74	0.42	-0.01	0.38
Citraconate/glutaconate	14.45	0.88	-0.01	0.48
3-methoxytyrosine	23.84	0.30	0.02	0.26
Arachidonate (20:4n6) to linoleate (18:2n6) ratio	29.75	0.12	-0.002	0.88
Arachidonate (20:4n6)	28.46	0.29	-0.01	0.30
1-palmitoyl-2-dihomo-linolenoyl-GP C (16:0/20:3n3 or 6)	31.26	0.05	0.03	0.01
Phosphate to serine ratio	18.05	0.45	-0.004	0.77
1,2-dilinoleoyl-GPE (18:2/18:2)	30.44	0.17	-0.02	0.27
1-oleoyl-2-docosahexaenoyl-GPC (18:1/22:6)	23.56	0.54	-0.01	0.75
Gamma-glutamyltryptophan	17.19	0.70	0.01	0.30
1-stearoyl-2-linoleoyl-gpc (18:0/18:2)	23.55	0.21	0.02	0.23
Galactonate	13.56	0.26	-0.04	0.13
Margaroylcarnitine (C17)	20.41	0.56	-0.01	0.20
N6-carbamoylthreonyladenosine	32.58	0.21	-0.03	0.003
1-stearoyl-2-arachidonoyl-GPI (18:0/20:4)	34.73	0.01	-0.02	0.38
X-18888	31.36	0.09	-0.01	0.54
3b-hydroxy-5-cholenoic acid	24.01	0.35	0.02	0.08
X-12816	25.63	0.48	0.01	0.47
Pristanate	9.99	0.44	-0.002	0.92
Guaiacol sulfate	22.40	0.44	-0.02	0.15
1-methyl-4-imidazoleacetate	22.44	0.61	-0.01	0.65
X-24344	7.44	0.68	-0.02	0.22
1,2-dilinoleoyl-GPC (18:2/18:2)	19.29	0.15	0.03	0.01
1-palmitoyl-2-linoleoyl-gpc (16:0/18:2)	36.20	0.28	0.0004	0.96
X-17654	18.95	0.52	0.01	0.49
Carnitine to propionylcarnitine (C3) ratio	17.06	0.59	0.01	0.28
Adenosine 5'-diphosphate (ADP) to glycerol ratio	9.05	0.94	-0.01	0.62
1-stearoyl-2-linoleoyl-GPI (18:0/18:2)	28.43	0.29	0.004	0.75
Hydroxy-cmpf	14.66	0.48	0.01	0.52

Linoleoyl ethanolamide	21.69	0.36	-0.01	0.42
Sphingomyelin (d18:1/14:0, d16:1/16:0)	16.34	0.80	0.002	0.86
Andro steroid monosulfate C19H28O6S	34.30	0.27	0.004	0.60
3-phosphoglycerate to adenosine 5'-diphosphate (ADP) ratio	14.46	0.56	0.02	0.19
Pregnenolone sulfate	35.47	0.13	-0.004	0.79
1-oleoyl-2-linoleoyl-GPE (18:1/18:2)	35.11	0.17	0.01	0.52
Arachidonate (20:4n6) to pyruvate ratio	23.90	0.01	-0.06	0.18
3-hydroxylaurate	6.82	0.56	-0.03	0.25
Bilirubin degradation product, C17H20N2O5	19.95	0.52	-0.01	0.18
Dodecanedioate	21.92	0.19	0.01	0.78
1-stearoyl-2-docosaheptaenoyl-gpc (18:0/22:6)	44.13	0.01	0.0002	0.99
Dihydrocaffeate sulfate	20.72	0.66	0.002	0.86
Aspartate to glutamate ratio	11.81	0.86	0.01	0.29
Cysteine	6.56	0.92	-0.01	0.45
Blood sugar	13.92	0.38	-0.01	0.20
X-12104	6.09	0.81	0.01	0.68
X-26109	17.57	0.73	-0.002	0.80
16a-hydroxy DHEA 3-sulfate	31.88	0.10	0.01	0.21
Phosphate to 2'-deoxyuridine ratio	32.88	0.24	0.002	0.89
Sphingomyelin (d18:2/23:0, d18:1/23:1, d17:1/24:1)	15.72	0.68	-0.01	0.33
Mannitol/sorbitol	20.00	0.46	-0.01	0.32
X-18901	21.15	0.57	-0.01	0.38
Histidine to alanine ratio	27.48	0.24	-0.01	0.17
Arachidonate (20:4n6) to caffeine ratio	46.53	0.001	0.03	0.08
Inosine 5'-monophosphate (IMP)	18.19	0.51	-0.01	0.70
Aconitate [cis or trans]	16.88	0.53	0.01	0.70
Histidine betaine (hercynine)	17.83	0.16	-0.01	0.83
Piperine	27.60	0.07	0.01	0.42
Cytidine to N-acetylglucosamine to	14.56	0.69	0.01	0.71

N-acetylgalactosamine ratio				
Orotidine	24.66	0.31	0.01	0.18
2'-o-methyluridine	18.05	0.16	0.01	0.66
Glycosyl-N-behenoyl-sphingadienine (d18:2/22:0)	30.33	0.14	-0.01	0.32
Cytidine	28.38	0.29	-0.01	0.26
Alpha-tocopherol to glycerol ratio	21.57	0.36	-0.01	0.36
Catechol sulfate	21.46	0.55	-0.02	0.07
Metabolonic lactone sulfate	24.75	0.48	0.001	0.93
Glycerophosphoethanolamine	7.65	0.98	-0.01	0.32
X-23654	34.50	0.22	0.01	0.38
Hypotaurine	13.75	0.93	-0.01	0.70
Kynurenine	25.91	0.008	-0.02	0.52