

Biomarkers Included in the MIP



MICROBIAL METABOLITES

Fungal Metabolites

1. Arabitol
2. Citramalic
3. 5-Hydroxymethyl-2-furoic
4. Furancarboxylglycine
5. Furan-2,5-dicarboxylic
6. Tricarballic
7. Ascorbic/Isoascorbic (vitamin C and Fungi)

Clostridia Metabolites

8. HPHPA
9. m-Cresol-sulphate
10. 3-Indoleacetic
11. -Hydroxyhippuric

Bacterial Metabolites

12. Benzoate
13. Hippurate
14. p-Hydroxybenzoate
15. p-Hydroxyphenylacetic
16. p-Hydroxyphenyllactic

Miscellaneous Microbial Metabolite

17. Tartaric

DETOXIFICATION INDICATORS

18. L-Pyroglutamic acid
19. N-Acetylcysteine (NAC)
20. 8-Hydroxy-2-deoxyguanosine
21. 4-Hydroxybutyric
22. Orotic Acid

METABOLISM & MITOCHONDRIAL FUNCTION

Citric Acid Cycle

23. Citric Acid
24. Cis-Aconitate
25. Isocitrate
26. 2-Oxoglutaric
27. Succinic acid
28. Fumarate
29. Malic acid

Glycolysis Metabolism/Lactic Acid Cycle

30. Pyruvic acid
31. L-Lactic acid
32. B-Hydroxybutyrate
33. 2,4-dihydroxybutanoic acid

Fatty Acid Metabolism

34. Adipate
35. Suberic acid
36. Ethylmalonate

Ketone and Fatty Acid Oxidation

37. Acetoacetic
38. Methylsuccinic
39. Sebacic

Miscellaneous Metabolism Metabolite

40. Creatinine

NUTRITION & OXALATES

Nutrients

41. Alpha-ketoisovalerate/ Alpha-ketoisocaproate/ Alpha-keto-Beta-methylvalerate
42. Xanthurenic acid
43. 4-Pyridoxic (B6)
44. Pantothenic (B5)
45. Glutaric (B2)
46. Formiminoglutamic acid (FIGLU)
47. Methylmalonic (MMA)

Pyrimidine Metabolites

48. Uracil
49. Thymine

Oxalates

50. Oxalic
51. Glycolic Acid
52. Glyceric Acid

Inborn Errors of Metabolism

53. 3-Methylglutaconic
54. B-hydroxyisovalerate
55. Malonic
56. 2-Oxoisocaproic
57. 2-Oxo-4-methylbutyric acid
58. 3-Hydroxy-3-Methylglutaric (CoQ10)
59. Mandelic
60. 3-Phenyllactic
61. Homogentisic

NEUROTRANSMITTER METABOLISM MARKERS

62. Homovanillic acid (HVA)
63. Vanilmandelic acid (VMA)
64. HVA/VMA ratio
65. 5-Hydroxyindoleacetic acid (5-HIAA)
66. Kynurenic acid
67. Quinolinic acid
68. Kynurenic acid/ Quinolinic Acid