



## Organic Acids in Urine GC-MS Analysis Kit

Organic acids which form a broad class of compounds; are physiological intermediates formed in the basic metabolic pathways such as amino acid metabolism, fatty acid oxidation, lipid metabolism and Krebs cycle. Organic acidemia is disorders caused by abnormal accumulation of organic acids in one or more of these metabolic pathways. Abnormal levels of organic acid are detected in the urine of people with chronic disease and neurological disorders. The analysis of organic acids is used in the early diagnosis or follow-up of health problems caused by amino acid and organic acid metabolism. TMS (trimethylsilyl) derivatives can be obtained using GC-MS technique and the following substances can be analyzed. Results are interpreted with internal standard (4-phenylbutyric acid).

### Highlights of the Analysis Kit

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Total run time is 66 min.



More than 200 organic acid parameters can be analysed with a single method



All analytes are detected with a large library. In this way, it can be used as a method in diagnosis and treatment



Consuming small volume of patient's sample



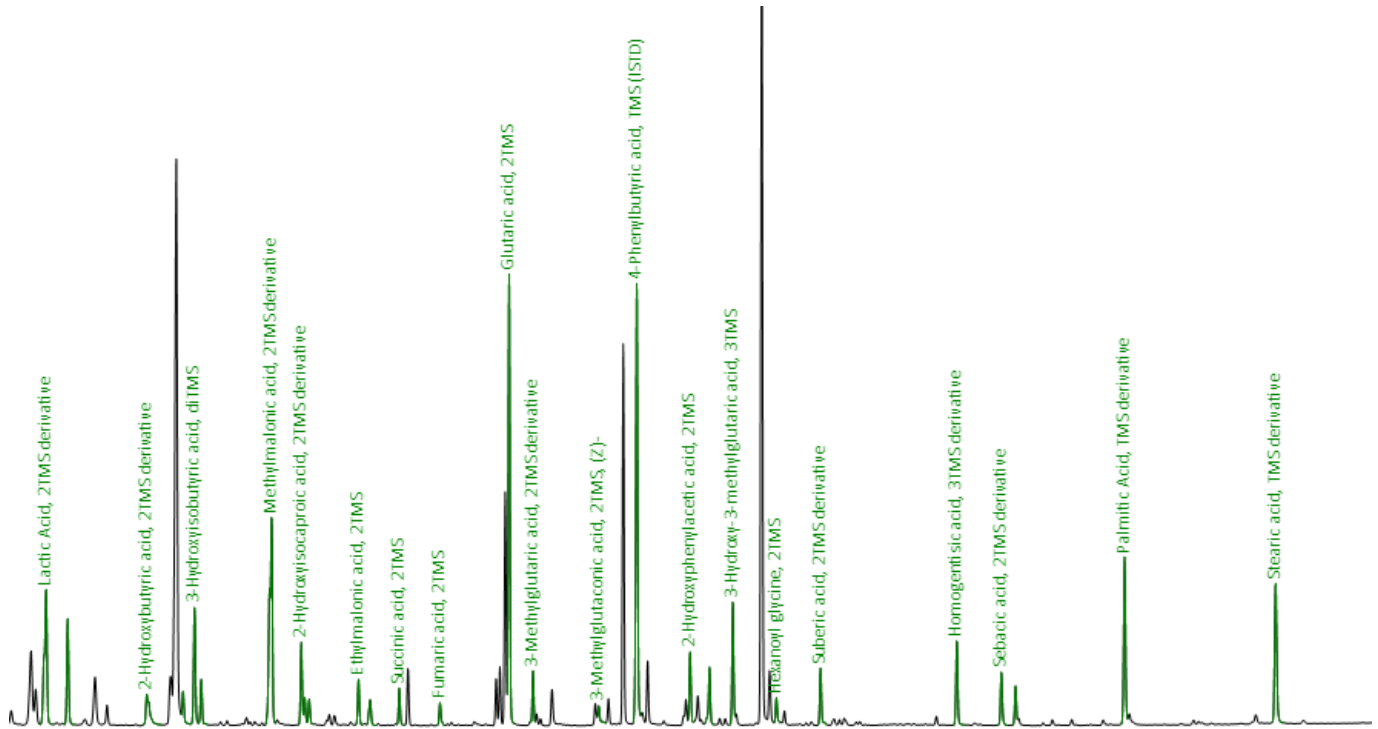
Long life span of GC column

Parameters*			
Lactic acid 2-Hydroxyisobutyric acid Glycolic acid Oxalic acid 2-Hydroxybutyric acid 3-Hydroxypropionic acid Pyruvic acid 3-Hydroxybutyric acid 3-Hydroxyisobutyric acid 2-Hydroxyisovaleric acid 2-Methyl-3-hydroxybutyric acid 3-Oxovalproic acid Malonic acid 3-Hydroxyisovaleric acid 2-Ketoisovaleric acid Methylmalonic acid 4-Hydroxybutyric acid 2-Hydroxyisocaproic acid 3-Hydroxyvaleric acid Acetoacetic acid 2-Hydroxy-3-methylvaleric acid Benzoic acid 2-Keto-3-methylvaleric acid	Octanoic acid 2-Methyl-3-hydroxyvaleric acid Glycerol Acetylglucine Ethylmalonic acid 2-Ketoisocaproic acid Phenylacetic acid Succinic acid Succinylacetone Methylsuccinic acid Glyceric acid Fumaric acid Uracil 5-hydroxy hexanoate Propionylglucine Acetylglucine Mevalonic lactone Isobutyrylglucine Glutaric acid Thymine 3-Methylglutaconic acid 3-Methylglutaric acid Propionylglucine	2-Methyl-3-hydroxy acetoacetic acid Isobutyrylglucine Isovalerylglucine Adipic acid 3-Hydroxyadipic acid Phenyllactic acid 4-Phenyl butyric acid (ISTD) 3-Methyladipic acid 5-Oxoproline 3-Methylcrotonoylglucine Tiglylglucine 2-Hydroxyphenylacetic acid 3-Hydroxy glutaric acid 2-Hydroxyglutaric acid 3-Hydroxy-3-methylglutaric acid 3-Hydroxyphenylacetic acid 2-Ketoglutaric acid 2-Hydroxyadipic acid 4-Hydroxyphenylacetic acid 2-Keto adipic acid Hexanoylglucine N-Acetylaspartic acid Glutaconic acid	Suberic acid Aconitic acid Orotic acid Homovanillic acid Hippuric acid Citric acid 3,4-Dihydroxyphenylacetic acid Homogentisic acid 3-Hydroxydodecanedioic acid Methylcitric acid Vanilmandelic acid Sebacic acid 4-Hydroxyphenyllactic acid 3-Indoleacetic acid 4-Hydroxyphenylpyruvic acid Palmitic acid 3-Hydroxysebacic acid N-Acetyltyrosine 3-Hydroxyhippuric acid Suberylglucine Stearic acid
*The number changes depending on the GC-MS Library.			
Sample Type			
Urine			

## Sample Preparation

1	Pipette 200 µl urine sample into a 15 ml screw cap glass tube
2	Each sample is diluted with 1 ml of distilled water
3	Add 25 µl internal standard
4	pH is adjusted to 1-2 10 µl Reagent 1
5	Add 100 µl of Reagent 2. It is kept at 60° C for 30 min.
6	1 spatula (~ 40mg) Reagent 3 is added to the samples
7	4ml Reagent 4 is added to the samples, 15 sec vortex
8	It is centrifuged at 3500rpm for 5 min.
9	3.5 ml is taken from the upper phase into the glass tube and 1 spatula (~ 131mg) Reagent 5 is added. It is vortexed for 15 sec. and tubes is wrapped with parafilm and kept for 20 min.
10	The sample is taken into the screw cap glass tube and the solvent is removed under nitrogen
11	The tube is closed by adding 50 µl Reagent 6 and 50 µl Reagent 7
12	The sample is incubated at 60 °C for 30 min.
13	Inject to the GC/MS system

## Example Chromatogram



Total ion chromatogram of organic acids



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