

## AMINO ACIDS ANALYSIS IN URINE

Amino acids make up proteins found in every tissue of the body and play a major role in many chemical processes that affects physical and mental functions. They contribute to the formation of proteins, neurotransmitters, enzymes and antibodies. Imbalances can manifest themselves as a variety of metabolic disorders and clinical symptoms.

Under the influence of heritary and other factors the optimal amount of each amino acids differs for each person and may change during life. Some important influences are: other nutrients, flora of the gut, pharmaceuticals, stress, disease, growth, pregnancy and environmental substances. Although (essential) amino acids play a crucial role in human life, they can be toxic when present in high amounts.

### THE TEST

Amino acid analysis provides information directly related to amino acids, but informs also about the functional activity of certain minerals and vitamins, food degradation, foreign flora in the intestinal tract, detoxification, free radical pathology and methylation. The analysis provides insight into absolute and relative deficiencies, toxicities and imbalances between nutrients. Several amino acids are synthesized with the help of enzymes, dependent on minerals or vitamins.

24-hour urine gives the most valuable information. It gives a picture over a 24-hour period. Furthermore many amino acids occur in detectable amounts only in urine. (Blood plasma gives only a picture of the moment and the total of amino acids to be analysed is less.)

The following amino acids and amino acid metabolites are determined:

Alanine	Cystine	1-Methylhistidine
Alfa-amino adipic acid	Ethanolamine	3-Methylhistidine
Alfa-amino butyric acid	Gamma-amino butyric acid	Ornithine
Cystathionine	Glutamine	Phenylalanine
Hydroxylysine	Glutamic acid	Phosphoethanolamine
Anserine	Glycine	Phosphoserine
Arginine	Histidine	Proline
Asparagine	Homocystine	Sarcosine
Aspartic acid	Hydroxyproline	Serine
Beta-alanine	Isoleucine	Taurine
Beta-aminoiso butyric acid	Leucine	Threonine
Carnosine	Lysine	Tryptophan
Citrulline	Methionine	Tyrosine
		Valine

### TEST INDICATIONS

The most important indications to perform an amino acid analysis are:

- Assessment of nutritional status (amino acid, minerals, vitamins)
- Food degradation, absorption and excretion dysfunctions.
- Free radical pathology
- Cardiovascular diseases
- Disturbances in immune function
- Carcinoma
- Allergy/hypersensitivity
- Rheumatism
- Toxicity/Detoxification problems
- Psychological/behavior disorders
- Multiple (vague) complaints/small symptoms /fatigue
- Prevention of diseases/Reach more optimal health status/athletic- performance
- Control of dietary changes/supplementation

These indications are mostly also applicable to the other essential nutrients (elements, trace-elements, vitamins). When combined (amino acid analysis with analysis of the other essential nutrients) the additional information enhances the therapy possibilities. In general, a better and faster response to therapy is reported.

### **COMPLEMENTARY TESTS**

It is very valuable to combine the aminoacid analysis with the measurement of other essential nutrients. Other important combinations are with:

- Microbiology of gut flora
- Indicine
- Food-Allergy

### **LITERATURE**

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