

Best Laboratory tests of vitamin, amino acids and other nutrients for mental function.

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The interest in Anti-aging is fast growing under a still small % of the population. Besides life-extension there is the quality of human life. A longer happy and healthy live of good quality that is what really counts. A happy live of good quality really depends on the function of the brain.

Critical scientist conclude: the best chances for anti-aging are in the field of calorie-restriction in combination with nutrient dense food.

Here is where “clinical nutrition or nutritional medicine” comes in.

In order to reach these goals it is needed to have:

- An optimal intake of essential nutrients which includes minimal damage to DNA.
- Minimal free radical pathology to reduce damage to enzymes and other biological active proteins/substances incl. DNA/RNA .
- An approach which takes considers the physiological individual need of nutrients for example caused by differences in each persons genes.

In addition to these general principles the brain has the situation that under normal conditions it consumes by weight four times more energy than most other cells of the human body. This causes the brain to be more sensitive to deficiencies of essential nutrients, free radical pathology, inflammation etc.

What is known in relation to DNA damage:

Free radicals damage DNA daily. Our body has a DNA recovery system which functions continuously. These free radicals are produced by irradiation(röntgen and gamma), toxic substances, energy production and inflammation(incl. Immune system).

Much less known is the fact that deficiencies of several essential nutrients cause similar damage to the DNA. This last cause is probable quantitative the most important.

A special place where damage to DNA/RNA, proteins/enzymes and lipids play an important role is in the mitochondria, where during energy production relative much free radicals escape and may cause damage. Bruce Ames calls this “ mitochondrional decay”. During aging in rats it is possible to reduce this damage with acetyl-carnitine en lipoic acid. Meta-analysis on human studies come to the same conclusion.

Genes in relation to the need of nutrients:

Each person has his own unique DNA and as a consequence everybody makes his own biological active substances such as enzymes which have unique different properties.

Bruce Ames has published in 2002 an extensive overview article in which he demonstrated that at least 50 diseases are known with an increased need of certain vitamins/minerals caused by mutations(starting from only one DNA sugar). This article demonstrates clearly the need for an individualised specific approach of diseases and anti-aging. The expectation is that this molecular basis of diseases will apply to many more diseases because +/- one third of the mutations results in so called “weakened ” enzymes or enzymes with an increased Km. A

recovery of the reduced activity of the “weakened” enzyme is possible by increasing the intake of the essential nutrients which act as cofactor on the enzyme. This information explains on a molecular basis the term “Biochemical Individuality” or with other words: Everybody has his/her own personal need of essential nutrients. That +/- one third of the mutations results in a less effective (weakened) enzymes gives a good explanation of the observed biochemical individuality. By using a higher concentration of co-factor the activity can at least partly be recovered and a more normal function develops. Also (other) cofactors may stabilise the enzyme to recover the effectiveness. The fastest results are reached by uniting the people having interest in this life-extension approach and demonstrate that this approach is effective. The WHF (World Health Foundation) has a section in which people who want to reach a happy and healthy 100 years work together to reach this goal.

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