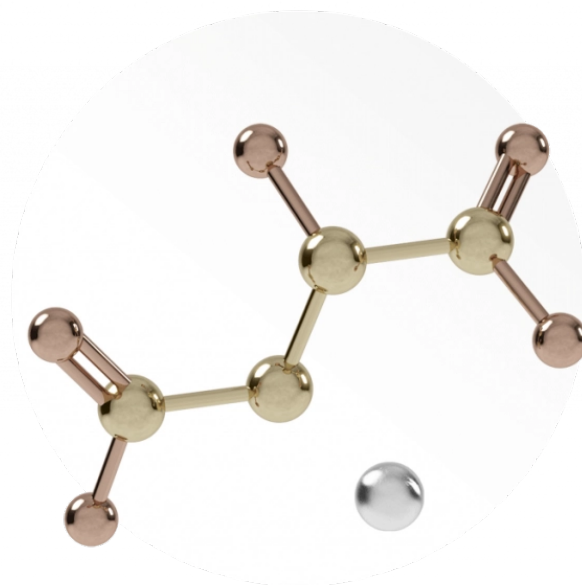




Malate, Magnesium and Longevity



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found in apples.

- It is an important fuel for the mitochondria, which are the powerplants of our cells.
- Malate extended lifespan in simple organisms.
- Malate improves energy production in mitochondria.
- Malate improves antioxidant status by increasing the production of antioxidant enzymes like superoxide dismutase.

effects in humans, including providing more energy.

- Malate can be linked to magnesium, an important mineral that regulates the proper functioning of hundreds of different proteins in the body, and that can lead to more DNA stability.
- Magnesium can also lead to a healthy low-inflammatory status. Magnesium also improves relaxation and sleep.

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- Mitochondrial dysfunction
 - Genomic instability
 - Altered intercellular communication
-

THE ROLE OF MALATE AND MAGNESIUM IN AGING AND LONGEVITY

Malate is a natural molecule found in plants and in our bodies. It's an important substance used by our mitochondria, the power plants of our cells.

Mitochondria convert sugars, fat **BUY NOW** amino-acids into energy (ATP). This





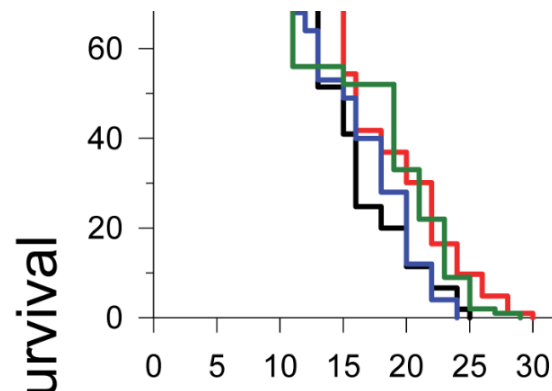
Malate derives its name from Latin. Malus means apple. This is because malate is present in high concentrations in apples, especially in sour apples. Malate gives apples their specific, sour apple-like taste. It's also present in rhubarb and grapes.

Malate and lifespan extention

Malate can extend lifespan in simple organisms (R,R). It does this by improving mitochondrial functioning.

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C elegans given malate (red) live longer than controls (black). Source: Malate and Fumarate Extend Lifespan in Caenorhabditis elegans. PLOS ONE

Malate can provide more energy

Malate also improves energy production in the mitochondria. It helps to generate ATP, the energy molecule that is the universal fuel for all our cells. Studies show that administering malate to aged rats improves their performance (R).

Malate can also improve antioxidant **BUY NOW** in aged rats, by increasing





Malate and magnesium: a strong combination

Malate is often used in combination with magnesium to bring about health benefits, especially for improving energy and reducing fatigue.

Magnesium and longevity

Magnesium is a very important mineral in the human body.

Magnesium functions as a cofactor to hundreds of different enzymes, which need magnesium to function properly.

Magnesium also regulates the excitation and inhibition of cells, and plays an important role in muscle relaxation, including of the heart muscle.

Given the role of magnesium in a myriad of cellular processes, it should not be surprising that magnesium deficiency leads to accelerated aging (R).

There are many ways in which magnesium deficiency can lead to accelerated aging. Magnesium is **BUY NOW** build, maintain and repair





example, magnesium binds to the DNA strand and stabilizes it, and it is also an essential cofactor for DNA repair proteins which need magnesium to function properly (R).

Magnesium can reduce inflammaging (low-grade inflammation that increases during aging). Low levels of magnesium have been linked to chronic low-grade inflammation, which is one of the drivers of aging (R).

Besides magnesium's many effects on maintaining our cells, the mineral has various immediately noticeable effects. Athletes take magnesium to improve their physical performance, even when they are not magnesium deficient (R).

Magnesium supplements also improve sleep, and feelings of relaxation and wellbeing.

This is not surprising, given the important role of magnesium in the functioning of brain cells, such as excitation and neuronal metabolism.

NOVOS CORE & Magnesium Malate

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