
Fulvic Acids Comprehensive Information

FULVIC ACIDS

(Fulvic acids) — Chemical and Biological Nature

Fulvic acids are the **low-molecular-weight fraction of humic substances**:

- their molecular weight is **5–10 times lower** than that of humic acids
- they are **highly soluble in water**
- they are **electrically active across a wide pH range**

The key distinguishing feature is their **ability to penetrate biological membranes**.

Mechanisms of Action

1. Transmembrane Transport of Minerals

Fulvic acids:

- form **chelated complexes with minerals**
- maintain them in a **bioavailable form**
- transport them **across cellular membranes**

Unlike conventional mineral salts:

- they do **not require high gastric acidity**
- they are **less likely to irritate the gastrointestinal tract**

As a result, they may contribute to an **increase in intracellular levels of Mg, Zn, Fe, and Se**.

2. Cellular Energy Support

Research indicates:

- improvement in **mitochondrial function**
- participation in **electron transport processes**
- reduction of **oxidative damage to mitochondria**

Subjectively, this may manifest as:

- increased energy levels
- reduced fatigue
- improved cognitive endurance

3. Antioxidant and Adaptogenic Effects

Fulvic acids:

- activate **endogenous antioxidant systems** (SOD, catalase)
- reduce the level of **intracellular free radicals**

Unlike humic acids, these effects are considered **systemic**.

4. Immune Regulation

Fulvic acids:

- do **not directly stimulate the immune system**
- help **optimize cellular immune responses**
- reduce **chronic low-grade inflammation**

This may be particularly relevant for individuals with:

- autoimmune tendencies
- metabolic syndrome
- chronic stress

Clinical Positioning

Fulvic acids may be appropriate when the goal is:

- **mineral replenishment**
- support of **cellular metabolism**
- enhancement of **adaptive capacity**
- recovery after **stress and increased physiological load**

Important Scientific Considerations

- They are **not medications**.
- They **do not replace medical therapy**.
- Their effect is **dose-dependent**.
- They should be taken **2–3 hours apart from medications**.

FULVIC ACIDS

(systemic action — cellular metabolism)

Conditions and Situations Where Their Use May Be Justified

1. Mineral Deficiencies

- magnesium deficiency
- iron-deficiency states (outside active anemia)

- zinc and selenium deficiency
- electrolyte imbalance

Rationale: chelated transport of minerals into cells and improved bioavailability.

2. Chronic Fatigue and Asthenic Conditions

- chronic fatigue syndrome
- post-stress exhaustion
- decreased physical and mental endurance

Rationale: support of mitochondrial function and cellular energy metabolism.

3. Neurological and Cognitive Functional Disturbances

- “brain fog”
- reduced concentration
- chronic stress
- emotional exhaustion

Rationale: improvement of cellular metabolism and antioxidant protection of neurons.

4. Immune and Inflammatory Conditions

- chronic low-grade inflammation
- frequent respiratory infections
- recovery after infections

Rationale: immune modulation without overstimulation and reduction of oxidative stress.

5. Metabolic Disorders

- insulin resistance (as part of a comprehensive support strategy)
- lipid metabolism disorders
- increased oxidative stress

Rationale: participation in the regulation of cellular metabolism and antioxidant systems.

6. Rehabilitation and Recovery

- post-surgical recovery
- recovery after severe illness
- recovery after intense physical exertion

Rationale: support of cellular repair processes and mineralization.

Conclusion

“Fulvic acids do not directly treat disease, but they help improve the conditions in which cells can function normally and recover.”

It is important to emphasize that they:

- do **not replace medications**
- do **not mask symptoms**
- act through **fundamental biological mechanisms**
- have a **cumulative effect over time**.