Iron Complex

A mineral the body needs to make hemoglobin, sold as tablets, capsules, liquids and gummies, alone or in multivitamins and prenatal products. Best used when a blood test shows low iron.

Key compounds and forms: Ferrous salts (ferrous sulfate, fumarate and gluconate) are the standard, best-studied forms. Chelated iron (ferrous bisglycinate) and polysaccharide-iron complexes are marketed as gentler on the stomach. Labels list elemental iron, which is only a fraction of the compound's weight. Vitamin C is often added because it helps absorption of non-heme iron.

Research summary: *Strong evidence* that iron corrects iron-deficiency anemia. *Emerging* for easing fatigue in women with low iron stores but no anemia (a small benefit). In pregnancy, routine iron likely reduces maternal anemia substantially, though evidence on possible harms is limited, so testing first is advised.

Evidence: well established for treating iron deficiency and anemia; weak and small for unexplained fatigue, and only when iron stores are low.

Key Benefits:

🩸 Anemia Correction & Ferritin Repletion [1]

Hemoglobin Synthesis: Iron is the core catalytic atom in heme, the oxygen-carrying protein in red blood cells. Iron supplements correct iron-deficiency anemia (IDA), restoring the blood's oxygen-carrying capacity.

Storage Replenishment: Restores depleted serum ferritin reserves (the body's long-term iron storage protein), preventing latent tissue deficiency from progressing into full-blown anemia.

In a randomized trial of 198 non-anemic women with low ferritin (under 50 µg/L), 80 mg/day of elemental iron for 12 weeks raised hemoglobin and ferritin, and the authors concluded iron should be considered for women with unexplained fatigue and low ferritin.[1]

In non-anemic pregnant women, a meta-analysis of 23 studies (4,492 women) found routine iron likely reduces maternal anemia substantially, although the evidence on possible harms was limited and inconsistent.[3]

🏃 Endurance & Metabolic Efficiency [2]

Oxidative Capacity: Iron is an essential component of cytochromes and iron-sulfur clusters within mitochondrial electron transport chains. Clinical trials in endurance athletes show that correcting sub-optimal iron status improves VO2 max, lowers submaximal heart rate, and enhances metabolic efficiency (DellaValle & Haas, 2014).

Who Should consider <u>testing</u>?

Individuals Diagnosed with Iron Deficiency or IDA: Confirmed via blood work showing low hemoglobin and/or low serum ferritin.

Pre-Menopausal Women with Heavy Menstrual Bleeding: A demographic at high chronic risk for recurring iron loss.

Pregnant Women: To support expanded maternal blood volume and fetal development.

Endurance Athletes & Runners: Prone to exercise-induced iron loss (footstrike hemolysis, sweat, and gastrointestinal micro-bleeding).

Vegans & Vegetarians: Plant-based (non-heme) iron has lower baseline bioavailability, raising systemic requirements.

Caution: Iron-Replete Individuals / Hemochromatosis: Never take high-dose iron supplements if your ferritin and hemoglobin are normal or elevated. Excess iron accumulates in organs (liver, heart, pancreas), driving severe systemic oxidative stress, tissue toxicity, and organ damage. Always test before supplementing.

Good to know: Best taken after a blood test confirms low iron. Iron often upsets the stomach (Tolkien et al., 2015) and, in excess, over time, build up in the body, so check with a doctor first, especially in pregnancy. Keep out of reach of children.

References

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