Trace minerals
• Micro or **trace minerals** are those **minerals** which the body requires less than 100 milligrams per day.

• There are nine trace minerals
9 Trace minerals

1. Zinc
2. Iron
3. Copper
4. Iodine
5. Selenium
6. Manganese
7. Chromium
8. Fluorine
9. Molybdenum
Zinc
Functions

• Nucleic acid synthesis
• Protein metabolism
• Immune function
• Antioxidant
• Development of sexual organs
• Synthesis, storage and release of insulin
• Synthesis of active form of vitamin A for visual pigments
Food sources:

- Protein sources like **meat** and **beans** are good sources of zinc.
- **Whole grains, spinach** and even **cocoa**
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Problems due to excess intake of zinc

• Excess intake of zinc may lead to zinc toxicity
• Zinc toxicity may be acute or chronic.
• Acute toxicity (ingesting more than 200 mg/day of zinc) can cause:
  • Abdominal pain, nausea, vomiting and diarrhoea

  • Other reported effects - gastric irritation, headache, irritability, lethargy, anaemia and dizziness.
Problems due to excess intake of zinc

• Prolonged intake of zinc ranging from 50-150 mg/day can lead to: disturbance of copper metabolism, causing low copper status, reduced iron function, red blood cell microcytosis, neutropenia and reduced immune function.

• It can also lead to reduced levels of high-density lipoproteins and so it has been suggested that excessive zinc intake may be atherogenic.

• Excess zinc can also affect cardiac function and can impair the pancreatic enzymes amylase and lipase.
Problems due to deficiency of zinc

• Anorexia, lethargy, diarrhea.
• Growth restriction (delayed bone maturation).
• Impaired immune function and susceptibility to infection.
• Impaired wound healing
• Low birth weight infants
• Alopecia (hair loss)
Iron
Functions

• Iron is present in the body as hemoglobin in blood cells which transports oxygen throughout the body, and carbon dioxide out of the body.

• Synthesis of some neurotransmitters

• Immune function

• Drug detoxification pathway

• Synthesis of steroid hormones
Food sources of iron

• Red meat and egg yolks are high in iron.

• Spinach, artichokes, dried fruit and molluscs.

• Some cereals are enriched with iron.

Germination and fermentation increase the iron availability
Problems due to excess intake of iron

• Over time, an excess of iron can damage the liver and cause liver cancer and damage other organs

• Cause arthritis and heart problems, atherosclerosis

• Gastro intestinal distress
Problems due to deficiency of iron

Iron deficiency anaemia.

- **Iron deficiency anaemia** occurs when the body does not have enough iron, leading to the decreased production of red blood cells.

- Red blood cells carry oxygen around the body. A lack of iron can be caused by several factors.