

TABLE 21.3 Minerals—cont'd

Vitamin	Function	Deficiency	Excess
<b>Sodium and chloride</b>	Important for: <ul style="list-style-type: none"> <li>• acid-base balance</li> <li>• blood pressure regulation</li> <li>• conversion of food into energy</li> <li>• digestion</li> <li>• fluid balance</li> <li>• muscle contraction</li> <li>• nervous system function</li> </ul>	Nausea, vomiting Dizziness Headache Muscle cramps	Hypertension Malfunction in cells
<b>Trace Minerals</b>			
<b>Chromium</b>	Important for: <ul style="list-style-type: none"> <li>• insulin production</li> <li>• protein, carbohydrate, and fat metabolism</li> </ul>	Rare: <ul style="list-style-type: none"> <li>• Diabetes mellitus symptoms: impairs ability to use glucose for energy</li> </ul>	None reported
<b>Copper</b>	Important for: <ul style="list-style-type: none"> <li>• bone, collagen, and connective tissue formation</li> <li>• energy production</li> <li>• iron metabolism</li> <li>• nervous system function</li> <li>• acts as an antioxidant</li> </ul>	Infection CV disease	Anxiety Insomnia Poor concentration Depression Tinnitus Headache Rash
<b>Fluoride</b>	Important for health of teeth	Dental caries Kidney stones	Mottling of teeth, possible brain underdevelopment in children
<b>Iron (ferrous)</b>	Important for: <ul style="list-style-type: none"> <li>• energy production</li> <li>• growth and development</li> <li>• immune function</li> <li>• red blood cell production</li> <li>• reproduction</li> <li>• wound healing</li> </ul>	Fatigue Anemia Pallor Pica (craving to eat nonfoods such as clay and laundry starch) Lethargy Weakness Vertigo Air hunger Confusion Irregular heartbeat Learning disabilities in children Insomnia	Constipation GI bleeding
<b>Iodine</b>	Important for: <ul style="list-style-type: none"> <li>• growth and development</li> <li>• metabolism</li> <li>• reproduction</li> <li>• thyroid hormone production</li> </ul>	Goiter Thyroid disease	Thyroid underactivity
<b>Manganese</b>	Important for: <ul style="list-style-type: none"> <li>• blood pressure and blood sugar regulation</li> <li>• bone formation</li> </ul>	Hearing loss Dizziness Ataxia Fainting	Decreased iron absorption leading to iron-deficiency anemia