

# Vitamin D Overview

## Why We Need Vitamin D?

Vitamin D is a fat-soluble vitamin critical for various physiological processes. It is unique because it functions as a hormone in the body, synthesized when the skin is exposed to UVB sunlight.

## Functions in the Body

Calcium & Bone Health: Enhances calcium and phosphorus absorption, essential for strong bones and teeth.

Immune Support: Modulates the immune system, reducing the risk of infections and autoimmune conditions.

Muscle Function: Supports muscle strength and reduces the risk of falls and fractures.

Cardiovascular Health: Plays a role in blood pressure regulation and heart health.

Mental Health: May help regulate mood and reduce the risk of depression.

## Recommended Daily Intake

Age Group

RDA (IU/day)

Infants (0-12 months) - 400 IU

Children (1-18 years) - 600 IU

Adults (19-70 years) - 600 IU

Adults (>70 years) - 800 IU

Pregnant/Breastfeeding Women - 600 IU

Upper Limit: 4,000 IU/day for adults to avoid toxicity.

Deficiency Risk Factors: Lack of sunlight exposure, darker skin tone, obesity, malabsorption disorders.

## Benefits of Adequate Vitamin D Levels

- Strengthens bones and reduces the risk of osteoporosis.
- Supports immune function and lowers inflammation.
- May reduce the risk of chronic diseases (e.g., heart disease, diabetes, multiple sclerosis).
- Enhances mood and may reduce symptoms of depression.
- Supports muscle function and reduces fall risk in older adults.

## Most Bioavailable Form

Vitamin D3 (Cholecalciferol): Most effective at raising and maintaining blood levels compared to Vitamin D2 (Ergocalciferol).

Best Sources: Sunlight (UVB exposure), fatty fish (salmon, mackerel), egg yolks, fortified dairy, and high-quality D3 supplements.

## Conclusion

Vitamin D is essential for overall health, with widespread benefits ranging from bone strength to immune function. Ensuring adequate intake through sun exposure, diet, and supplementation (preferably D3) is crucial for optimal health.

**Vitamin D3**  
Cholecalciferol  
C<sub>27</sub>H<sub>44</sub>O

