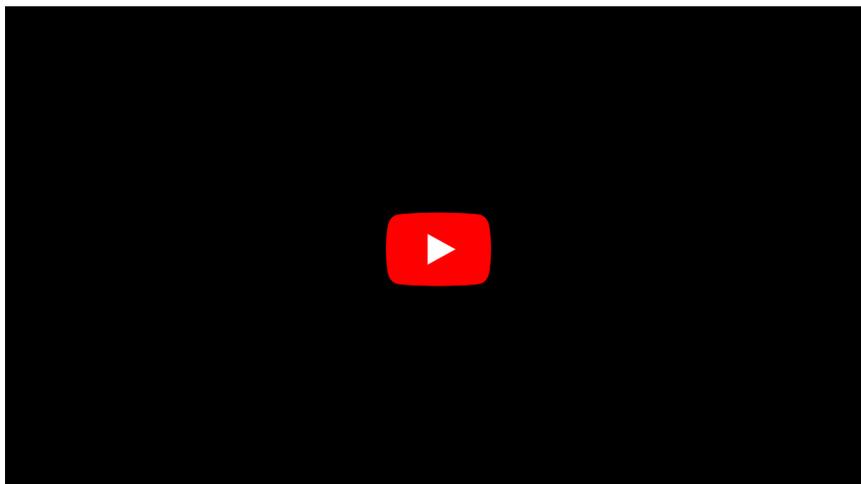


# Calcitriol

## Calcitriol:



**Calcitriol** is the active form of **vitamin D<sub>3</sub>** (cholecalciferol). Chemically, it is a **steroid hormone** that plays a role in calcium metabolism and its regulation in the human body. **Vitamin D<sub>3</sub>** is synthesised in the skin (*stratum basale*) when exposed to the UV light or is ingested in food (e.g. dairy, cereals, fish). Vitamin D is the **ONLY** vitamin that the human body can produce on its own.

The active metabolite calcitriol is formed in the **proximal convoluted tubules of the kidneys** by the way of hydroxylation of *25-hydroxycholecalciferol* to *1,25-dihydroxycholecalciferol* (enzyme *1 $\alpha$ -hydroxylase*).

## Biological function

- Increased resorption of calcium and phosphate in the small intestine
- Stimulation of bone mineralisation & remodeling at low/normal vitamin D levels
- Stimulation of bone resorption at high vitamin D levels – leads to increased serum calcium and phosphate levels
- Together with PTH acts on the kidney and increases resorption of calcium, calcitriol also increases reabsorption of phosphates in the kidney (PTH stimulates phosphate excretion)
- Regulated by negative-feedback loop: hypercalcemia leads to decreased activity of both calcitriol and PTH

## Transport & Storage

Vitamin D and its metabolites are transported in blood to target cells bound to a **vitamin D-binding protein (DBP)** which is a glycoprotein. Only 1% of vitamin D is free in blood. The biological half life is only a couple of hours, but as a steroid hormone, vitamin D can be stored in the adipose tissue as *25-hydroxycholecalciferol*.

## References

### Related articles

- Vitamin D
- Ergocalciferol
- Calcium-phosphate metabolism
- Osteomalacia

### Bibliography

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