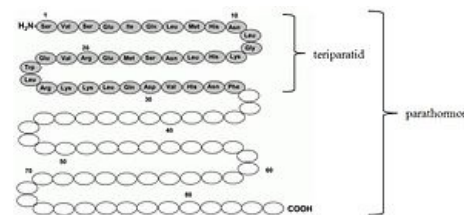


# Teriparatide

Parathyroid hormone is an 84 amino acid polypeptide. However, a 34 amino acid sequence at the -NH<sub>2</sub> end of human parathyroid hormone is sufficient for biological effect. Thus, teriparatide (TPTD) is an endogenous fragment of parathyroid hormone with the same effects as parathyroid hormone itself. Like PTH, it binds to Osteoblasts and increases their activity. However, at the same time, the activity of osteoclasts increases compensatory, but disproportionately, and bone resorption outweighs the increase in bone mass. And the essence of osteoanabolic teriparatide (and PTH itself) lies in the effect of strongly stimulating osteoblasts in the first stages of the action of PTH.



Structure of teriparatide

## Effects of TPTD

The effects of TPTD depend on the nature of the exposure (intermittent or continuous).

- **Intermittent applications** of PTH stimulates the release of IGF-I (stimulates collagen synthesis). It also interferes with the OPG-RANKL-RANK system (RANK ligand expression promotes bone resorption by increased differentiation of precursors into osteoclasts, OPG expression inhibits differentiation of precursors into osteoclasts). Teriparatide (also PTH) administered daily in very small doses has a significant **osteoanabolic effect**. It stimulates bone formation, induces the growth of cancellous and cortical bone and restores bone beam connectivity.
- **Continuous secretion** of PTH (hyperparathyroidism model) suppresses collagen synthesis and contributes to osteoporosis.

## Indication

Treatment of the most severe forms of osteoporosis (frequent fractures of vertebral and non-vertebral bones), treatment of osteoporosis in postmenopausal women or iatrogenic induced osteoporosis (administration of glucocorticoids).

## Contraindication

Bone diseases increasing the likelihood of developing osteosarcoma (for example Paget's disease).

## Side effects

They are not common. Nausea, dizziness, headache may occur.

## Method of administration and dosage

In the Czech Republic is available [1] (<https://www.sukl.cz/modules/medication/search.php?data%5Bmaterial%5D=teriparatid&data%5Bchbox%5D%5B%5D=marketability#data-listing>) teriparatide. TPTD is administered by subcutaneous pen with 20 µg teriparatide 1x daily. Each dose is 80 µg of solution. The entire dose (or injector) is sufficient for 28 days of treatment. Treatment is usually scheduled for 18 months.

## Cons

High cost because it is produced by recombinant technology using the strain *E. coli*.

## Links

### Related articles

- Calcium
- Phosphate
- Vitamin D
- Osteoporosis
- Therapy of osteoporosis

## References

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- ROSA, Jan. Teriparatid. *Remedia* [online]. 2008, y. 5, no. 18, p. 338-344, Available from

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