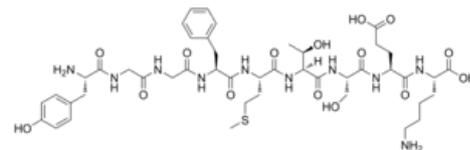


# Endorphins

*Endorphins* are chemicals belonging to the **endogenous opioid polypeptides**, usually containing 15–30 amino acid residues. They arise from the cleavage of precursor proteins in specialized tissues such as the brain and pancreas.



Beta-endorphin 1-9

## Action of endorphins

They act on target cells using specialized **membrane receptors**, and can act as neurotransmitters and neuromodulators. Their effect is usually modulatory, in particular they affect mood, sleep and some endocrine functions. Among the most important effects of endorphins are analgesia, good mood to euphoria, respiratory depression and reduced motility of the gastrointestinal tract, which is sometimes accompanied by nausea and vomiting.

## Effect on receptors

The resulting effect of endorphins is dependent on the interaction with the respective receptor. We recognize three types of receptors: **μ**, **κ**, **δ**. When endorphin interacts with the **μ** receptor, analgesia, a feeling of euphoria, respiratory depression and cough suppression occur. Conversely, when interacting with **κ**, **δ** receptors, analgesia usually only occurs at the spinal and supraspinal levels. These receptors are found both in the **central nervous system** and in the periphery. The effect of endorphins depends on the amount released or artificially delivered to the blood. The rule here is that *the greater the quantity, the greater the effect*.

## Release of endorphins

Endorphins are released in several ways, for example, they can be released during increased physical activity, during adrenaline activities or during stress. Endorphins can also be delivered to the body artificially in the form of pharmaceutical preparations. This artificial feeding is inappropriate in the long term. This is because tolerance and **habituation** to the given type of endorphin is created and its effect is **weakened**. This can be manifested by a decrease in the analgesic effect or a decrease in the duration of action. With prolonged chronic use, it can go as far as addiction, when after a sudden cancellation, withdrawal symptoms may develop.

## Links

### Related articles

- Hormones
- Receptors
- Opioids (pediatrics)
- Opioid analgesics

### References

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