

# Noradrenaline

Template:Stump

**Noradrenaline'** (also *norepinephrine*) is a hormone produced by the adrenal medulla and a neurotransmitter. It is particularly involved in the activities of the sympathetic vegetative system and in mediating the stress response.

It is stored and synthesized (mainly) in the terminal branches of unmyelinated '*sympathetic postganglionic nerve fibers*. After action potential is received, there is an influx of  $\text{Ca}^{2+}$  and an outpouring of noradrenaline into the synaptic cleft.

adrenal medulla  
amino acid derivative  
 $\alpha$  and  $\beta$  receptors

## Synthesis

Biosynthesis takes place in the adrenal medulla and adrenergic neurons. The basis is tyrosine.

1. **Dopa** - hydroxylation of the aromatic ring, tetrahydrobiopterin (THB);
2. **Dopamine** - dopa decarboxylation, pyridoxal phosphate;
3. **Noradrenaline** - hydroxylation of dopamine, dopamine- $\beta$ -monooxygenase (cofactor: ascorbic acid).

## Effect

It works by binding to the adrenergic receptor system G-proteins.

### Increasing inotropy

bathmotropia, chronotropia and dromotropia

The mechanism of increased contraction works thanks to  $\beta_1$ - receptors on the myocardial membrane, which bind noradrenaline and cause an increase in cAMP concentration, which activates protein kinase, which phosphorylates L-type  $\text{Ca}^{2+}$  channels, which thereby remain open longer.

 *For more information see Catecholamines.*

## Links

### Related Articles

- Renin-angiotensin-aldosterone system

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