

Adiponectin

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Adiponectin belongs to the hormones of adipose tissue, so-called adipokines, its synthesis takes place in adipocytes.

Structure and synthesis

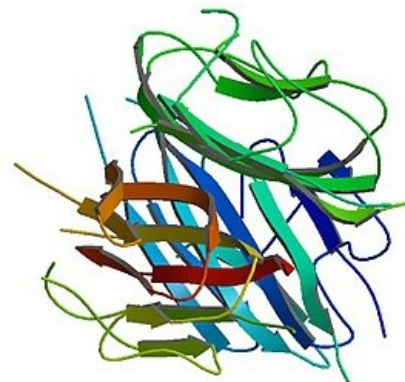
It is a 244 AMK polypeptide, the adiponectin receptors are *AdipoR1,2*, are expressed in most organs. AdipoR1 is a receptor mainly found in skeletal muscle, while AdipoR2 is found mainly in the liver.^[1]

The concentration of the hormone in the blood is relatively high, higher than, for example, the concentration of leptin. It is in the range of 0.5-30 µg /l.

The level of adiponectin **negatively correlates** with the proportion of adipose tissue in the body, in obese people we find lower levels than in patients with normal BMI values. ^[1] Plasma concentration increases with age, women tend to have higher levels than men (the cause is a higher proportion of adipose tissue in women).

Significantly lower levels are found in patients suffering from diabetes mellitus and, for example, in patients with ischemic lower limb disease. Glucocorticoids, β-adrenergic agonists and TNF-α reduce level of adiponectin. Elevated levels of adiponectin are observed in patients after adrenalectomy, it can also be caused by cold, the action of IGF-1, increased values may be found in patients with some types of malnutrition (eg mental anorexia).

Plasma adiponectin exists in several forms. It can form trimers, hexamers and higher polymer structures. The effects of these isoforms are different.



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Function

Adiponectin is mainly involved in the metabolism of lipids and carbohydrates. Its effects also include:

- increase of β-oxidation of FA in muscles, this increases the sensitivity of tissues to insulin;
- suppresion of gluconeogenesis by liver
- increase of oxidation of free fatty acids in the liver, support of their utilization in muscle, liver and fat cells;
- anti-inflammatory effect (by increasing the production of interleukins IL-1 and IL-10);
- regulates eNOS;
- protective effect on endothelium;
- hypoglycaemic effect.

Due to its protective effect on endothelial cells, adiponectin acts as a **protective hormone** in the development of atherosclerosis. The mechanism of action is to reduce the production of adhesive molecules, while slowing down the transformation of macrophages into foam cells. It also has an inhibitory effect on the proliferation and migration of smooth muscle cells.^[1]

Current findings suggest that adiponectin may be a link between obesity and insulin resistance and atherosclerosis. Experimental models demonstrate the protective role of adiponectin in the development of insulin resistance and diabetes. ^[2] Administration of adiponectin in clinical practice could expand the pharmacological possibilities of prevention and treatment of atherosclerosis and type 2 DM.

. ^[3]So far, the only group of drugs that increase adiponectin levels are **glitazones** - insulin sensitizers from the group of oral antidiabetics.

References

Související články

- Endokrinní funkce tukové tkáně
- Tuková tkáň

Links

- Hormony tukové tkáně, Multimediální skripta 3. LF UK (<http://fbt.cz/skripta/xi-regulacni-mechanismy-1-endokrinni-regulace/8-hormony-tukove-tkane/>)
- Adiponektin na české Wikipedii

Reference

1. KITTNAR, Otomar, et al. *Lékařská fyziologie*. 1. vydání. Praha : Grada, 2011. 790 s. s. 539. ISBN 978-80-247-3068-4.
2. ↑ Skočit nahoru k:a b c NOVOTNÝ, D, et al. Adiponektin – parametr s protizánětlivým a protiaterogenním potenciálem. *Klinická biochemie a metabolismus* [online]. 2008, roč. 16, vol. 3, s. 171-177, dostupné také z <http://www.cskb.cz/res/file/KBM-pdf/2008/3-08/KBM_3-08_Novotny_171.pdf>.
3. ↑ Skočit nahoru k:a b c d HOUSOVÁ, J, D HOUSA a M HALUZÍK. Adiponektin – nový adipocytární hormon se vztahem k obezitě a inzulinové rezistenci. *Vnitřní lékařství* [online]. 2005, roč. 51, vol. 2, s. 221-225, dostupné také z <<https://www.prolekare.cz/specialist-agreement>>.
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5. ↑ Skočit nahoru k:a b LAVRÍKOVÁ, Petra a Josef FONTANA. *Funkce buněk a lidského těla : Multimediální skripta* [online]. [cit. 2016-01-29]. <<http://fbt.cz/skripta/xi-regulacni-mechanismy-1-endokrinni-regulace/8-hormony-tukove-tkane/>>.

Kategorie:Endokrinologie

Kategorie:Fyziologie

1. **Cite error: Invalid <ref> tag; no text was provided for refs named kittnar**
2. **Cite error: Invalid <ref> tag; no text was provided for refs named Novotný**
3. **Cite error: Invalid <ref> tag; no text was provided for refs named housová**