ADRENALINE, AND WHAT PROCESSES OCCUR UNDER ITS ACTION IN OUR BODY

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Summary: In this article, we will consider the principle of one of the most tangible and powerful mediators functioning in the body. Adrenaline (epinephrine - in the USA) is simple to outrage, in super stressful situations it turns on and saves a life. He, as a professional bodyguard, is inactive 99% of the time, but at 1%, works quickly, hard, effectively. Adrenaline is generally a hormone, but structurally close to noradrenaline. Similar effects, only with a sense of fear and anxiety. The hormone, which is produced by the brain substance of the adrenal glands, which plays a special role in the adaptation mechanism of the body to stressful circumstances (often they say this: "struggle or flight"). Its effect on the body is quite diverse, it increases the strength and speed of the heartbeat, the frequency and depth of breathing, causes a cast of blood from the skin and digestive system, and flushes to the heart and mice, and also stimulates the production of glucose in the liver to increase the amount of energy by increased breathing. Synthetic adrenaline is used in some cases as a medicine, especially when removing patients from a state of shock or after cardiac arrest.

Keywords: Adrenaline, hormone, fear,

Relevance: How does adrenaline work?
Starting materials are amino acids, protein-rich products. Adrenaline belongs to catecholamines, and is the last, strongest link. Noradrenaline and dopamine are also catecholamines, but are felt much softer. Adrenaline increases blood clotting
time, as well as the number of red blood cells and the level of hemoglobin and blood protein. These effects reflect the process of blood thickening due to the transition of fluid from the blood bed to the interstitial space. The number of eosinophils under the influence of adrenaline decreases, probably due to increased cortisol secretion. Acting on the liver and pancreas, adrenaline causes hyperglycemia. In the liver, it enhances glycogenolysis and gluconeogenesis. Adrenaline and to a lesser extent noradrenaline enhance lipolysis in adipose tissue, raising plasma fatty acid levels.

In a sudden stressful situation, this hormone is produced by our adrenal glands. But the production and release of matter into the blood does not mean anything. To work, adrenaline, like any other hormone or neurotransmitter, needs to attach to specific receptors on the cell so that this cell sharply feels that adrenaline sucked to it as a leech.

This seemingly complex process takes a fraction of a second. Try jumping into the hole and in a second cheer up like the most powerful psychostimulant.

**Adrenaline receptors**

Our body is very smart and he himself knows to which receptors adrenaline needs to be attached. Adrenaline in the body acts as a powerful source of energy, and where to direct energy are the receptors to adrenaline or adenoreceptors. By the way, noradrenaline also works with these receptors.

**Alpha adrenoceptors**

There are 2 of them.

Alpha 1 receptor regulates primarily smooth muscles. These are blood vessels, intestines. So, when adrenaline is attached to alpha1 adrenoreceptors, blood circulation becomes worse, the brain works worse. That is why fright or severe stress sometimes causes skin pale and blood outflow. Noradrenaline works more with this receptor than adrenaline.

Alpha 2 receptor is already in our brain on nerve cells and part is also on smooth muscles, otherwise little alpha 1 will not drag!

In order not to make a boring article, we will immediately turn to the effects: suppression of the release of noradrenaline and acetylcholine. Alpha 2 receptor immediately dramatically reduces noradrenaline itself. Increase and then abrupt pressure reduction. Immediately slowing down metabolism. In short, you will not want to eat or to the toilet under alpha 2 receptors.

**Beta-Adrenoreceptors**

There are 3 of them.

Beta 1. Makes you sweaty, accelerates your heartbeat, promotes fat burning.

Beta 2. This is exactly the receptor that already affects skeletal muscles, realizing the function "Hit or run." Endurance increases sharply, it seems enough to lift cars, but it seems. Beta 2 adrenoreceptor improves glucose delivery and enlarges the arteries, so the brain also considers a little faster. The only thing - for good effects, so that the head is not dizzy and does not pick up - it is important to eat more carbohydrates.

Beta 3. It is present in adipose tissue, when activated, it "drowns" fat more strongly and "heats" skeletal muscles, indirectly increasing their performance.

It cannot be said that in one situation, adrenaline and noradrenaline are attached to just one receptor, and ignore the other. There is always a percentage...
distribution. When you are ashamed - adrenaline is produced, when it is scary - he is. Only receptors in the first case make you blush, and in the second - pale.

There is also a difference in adrenaline and noradrenaline. Once an example was given that in the body of a lion - a predatory aggressive animal, the production of noradrenaline prevails, and in a cowardly hare - adrenaline. This is a slippery topic, but there is a share of truth.

We are used to the fact that character determines the level of our courage and cowardice. On the other hand, character is formed from the ratio of different substances that are produced in us. In general, think about this topic

**How to increase adrenaline?**

Usually, people do not have problems with raising this hormone when it is necessary to increase it - be sure. Let us dwell on the specific increase in the activity of individual receptors, the so-called agonists. Information is provided for study purposes.

- Alpha 1: Ethylephrine, phenylephrine, synephrine and other -ephines
- Alpha 2: Agmatin, clophelin.
- Beta 1: Heart medications usually use pure adrenaline, or epinephrine, the one Stetham chased in the film.
- Beta 2: Ephedrine Territory and DMAA. But they’re not pure beta 2 receptor agonists. The most famous agonist of beta 2 is clenbuterol.
- Beta 3 have very few agonists.

**How to reduce Adrenaline?**

First of all, calm down if there is such an opportunity. It is necessary to look at the situation from the outside, and if in 5 years, you do not remember it - you should not mean to be a guy. Of course, you can’t turn off the adrenaline, at the moment of slipping on the ice, some sharp movement will still happen. However, in border situations, it is better not to worry.

There are certain substances that slightly reduce anxiety by normalizing the condition by raising other hormones and neurometers. This is like in mathematics: stress, adrenaline, cortisol made + 5 units to nervousness, and anti-anxiety did -2, averaged + 3.

- Lighter, mild soothing substances: Selank, L-theanine, Cava, Rodiola tincture.
- But you can not only put pressure on the brake, you can also relax the pressure on the gas. With adrenaline and noradrenaline, this means blocking their access to receptors. Such substances are called adreno blockers. We will not stupidly list the names of drugs, but we will stop at one popular blocker - Yohimbin.

There will be a separate issue on this substance! His interest is that he is both a stimulant and a nootrope. As previously mentioned, the only receptor that helps reduce acetylcholine and noradrenaline is alpha-2. When it is blocked by yohimbin, on the contrary, an increase in noradrenaline and acetylcholine occurs. So, although this is a blocker - there is more stimulation from it, and acetylcholine will shift part of the stimulation into intelligence. Note the substance

**Conclusion:**

Adrenaline is the most tangible hormone. It will be slightly weaker - noradrenaline and even weaker - dopamine. Adrenaline jumps out more when there is a direct threat to life, noradrenaline - when it is fearful, feeling before a responsible...
performance, when there is still a good admixture of dopamine, it is not just fearful, but also curious/interesting.

1. The action of adrenaline depends on the operation of adrenoceptors.
2. Increase adrenaline and noradrenaline: stress. Of the substances: Yochimbin, DMAA, Klenbuterol.
3. Reduce: Adrenoblockers.

Well, adrenaline, noradrenaline and dopamine are the key to at least a bright, rich life. It is important not to go into a strong minus.

References:
[1] Abe, N., Toyama, H., Ejima, Y., Saito, K., Tamada, T., Yamauchi, M., & Kazama, I. (2020). α_{1}-Adrenergic Receptor Blockade by Prazosin Synergistically Stabilizes Rat Peritoneal Mast Cells. *BioMed research international*, 2020, 3214186. https://doi.org/10.1155/2020/3214186
[2] Mieda, R., Aso, C., Hiroki, T., Kanamoto, M., Suto, T., Tobe, M., & Saito, S. (2020). Comparison of four documents describing adrenaline purification, and the work of three important scientists, Keizo Uenaka, Nagai Nagayoshi and Jokichi Takamine. *Journal of anesthesia history*, 6(2), 42–48. https://doi.org/10.1016/j.janh.2020.04.001
[3] Ball, C. M., & Featherstone, P. J. (2017). The early history of adrenaline. *Anaesthesia and intensive care*, 45(3), 279–281. https://doi.org/10.1177/0310057X1704500301
[4] Strosberg A. D. (1993). Structure, function, and regulation of adrenergic receptors. *Protein science: a publication of the Protein Society*, 2(8), 1198–1209. https://doi.org/10.1002/pro.5560020802
[5] Schmidt, K. T., & Weinshenker, D. (2014). Adrenaline rush: the role of adrenergic receptors in stimulant-induced behaviors. *Molecular pharmacology*, 85(4), 640–650. https://doi.org/10.1124/mol.113.090118
[6] Molinoff P. B. (1984). Alpha- and beta-adrenergic receptor subtypes properties, distribution and regulation. *Drugs*, 28 Suppl 2, 1–15. https://doi.org/10.2165/00003495-198400282-00002
[7] Mizobe T. (1997). *Masui. The Japanese journal of anesthesiology*, 46(5), 650–657.
[8] Чинкин, А. С. (2014). Соотношения адреналин: норадреналин и альфа-: бета-адренорецепторы в миокарде и адренергические хроно-и инотропные реакции при экстремальных состояниях и адаптации. *Наука и спорт: современные тенденции*, 4(3 (4)).
[9] Brown, H. F., DiFrancesco, D., & Noble, S. J. (1979). How does adrenaline accelerate the heart?. *Nature*, 280(5719), 235-236.
[10] Green, D. E., & Richter, D. (1937). Adrenaline and adrenochrome. *Biochemical Journal*, 31(4), 596.