

Cannabinoids produced in the human body have an anti-inflammatory effect

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Endocannabinoids seem to play an important role in regulating inflammation processes. Scientists from the University of Bonn have discovered this in experiments on mice. Their results will be published in the distinguished scientific journal *Science* on Friday, 8 June. The study may also have implications for therapy. In animal experiments, a solution with an important component made from cannabis reduced allergic reactions of the skin.

Extracts of the hemp plant cannabis are traditionally used as a popular remedy against inflammation. At the beginning of the last century this natural remedy was even available at every chemist's. But due to the intoxicating effect of the component THC (tetrahydrocannabinol) the plant was taken off the chemist's shelves in the 1930s.

THC acts on the cannabinoid receptors, of which there are two types, CB1 and CB2. Both receptors are made such that THC can attach itself to them. In the brain this causes the intoxicating effect of hashish, cannabis and marijuana. But why does the body have CB1 and CB2 anyway" For two decades it has been known that the human body also produces its own cannabinoids. Like THC they can attach themselves to the receptors. The brain scientist Professor Andreas Zimmer from the Bonn Institute of Molecular Psychiatry is investigating what the function of this endocannabinoid system is. 'Mice without CB1 receptors show psychological abnormalities,' he explains. 'By contrast, CB2 regulates the growth of bones, for example.'

Coincidence

However, according to these most recent results, endocannabinoids also seem to play an important part in regulating inflammation processes. As is often the case with important discoveries, coincidence was involved. In scientific experiments mice are given an ear clip, so that researchers can tell them apart. 'In most cases the mice can handle this without problems,' Dr. Meliha Karsak, a member of Professor Zimmer's team, explains. 'With our mice this was different. The skin around the ear clips became inflamed.' There are genetically modified strains of mice in which both cannabinoid receptors are dysfunctional. 'And it was in precisely these strains that the inflammation occurred,' she explains.

Together with the Bonn dermatologists Dr. Evelyn Gaffal and Professor Thomas Tüting the researchers investigated these findings. Skin rash can be caused by allergens in laboratory mice. 'However, normally these rashes are only minor,' Dr. Gaffal emphasises. 'However, strains of mice in which the cannabinoid receptors are missing react much more intensely. We observed something similar when we blocked the receptors with medication.'

Step on the brakes

When inflammation occurs the endocannabinoids act like someone stepping on the brakes. They prevent the body from doing too much of a good thing and the immune reaction from getting out of control. This is consistent with the fact that at the beginning of the infection the endocannabinoid concentration increased in the mice. 'Apart from that there are strains of mice in which the breakdown of these active substances produced by the body is malfunctioning,' Evelyn Gaffal says. 'They have an increased endocannabinoid concentration in their skin. In our experiments these animals also showed a less marked allergic

reaction.'

The results open up new options for the treatment of skin allergies and inflammation. Firstly, drugs which prevent the breakdown of endocannabinoids look promising. But the old household remedy cannabis could also make a comeback as an ointment. In the experiment on mice this approach has already been successful. 'If we dabbed THC solution on to the animals' skin shortly before and after applying the allergen, a lot less swelling occurred than normal,' Professor Thomas Tüting explains. 'THC attaches itself to cannabinoid receptors and activates them. In this way the active substance reduces the allergic reaction.' Incidentally, ointment like this would probably not have an intoxicating effect, for this the amount of THC contained would be much too small.

Source: University of Bonn

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