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We are close to the first drug capable of protecting memory in Parkinson's patients: how it works

Although Parkinson's disease is primarily characterized by muscle stiffness and motor problems, it can also lead to cognitive impairment and, in the long term, dementia. Now a group of researchers is working on a new drug that may be able to act on the latter, blocking brain inflammation.

By **Maria Teresa Gasbarrone**

SCIENCE

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Parkinson's disease is a **neurodegenerative disorder** that causes stiffness, tremors, and difficulty moving or maintaining balance. However, those affected often also develop **cognitive impairment**, which in the long term can degenerate into a form of **dementia**. While there are drugs that can control the motor symptoms, the **cognitive decline** often associated with Parkinson's disease still **has no effective treatment**.

But things could soon change. Or at least that's what the group of researchers at the University of Arizona School of Medicine are hoping. They're currently working to find a **drug that can block the neurodegeneration** and cognitive symptoms associated with Parkinson's, even before actual dementia develops. According to their statistics, at the time of diagnosis, 25% to 30% of patients have mild cognitive impairment, but in the long term, **cognitive symptoms appear in more than half of patients**. Here's a closer look at the [difference between Alzheimer's disease and other forms of dementia](#).



The role of brain inflammation

Now, in an [article](#) published in the journal *Experimental Neurology*, the authors of the study reveal that they are **on the right track**: They have found a potential drug that, based on what emerged in experiments on mice, has proven capable of **reversing cognitive decline** and reducing the activity of some brain cells, [microglia](#), which in Parkinson's are produced in excess, contributing – the researchers suppose – to the **neuroinflammation** typical of the disease.

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The chemical, **PNA5**, from which researchers hope to produce a drug that can [halt cognitive decline in](#) Parkinson's dementia – and other conditions – was developed from a **chemical** that the body produces naturally that was slightly modified.

How the new drug can work

The results obtained in the tests conducted so far are promising: In a healthy brain, **microglia** cells, as immune cells, seek out – [the authors explain](#) – viruses or lesions and secrete substances that block the damage, but in Parkinson's disease, microglia give rise to **an unmotivated hyperactivity** "that can cause **further damage to the surrounding tissue**, especially in regions associated with cognitive decline". This overproduction would be linked to the brain inflammation typical of Parkinson's disease.

However, after treatment with PNA5, the researchers observed **a visible reduction in inflammation levels** and a consequent reduction in brain cell loss. Based on this, they hypothesized that PNA5 is able to **control the excessive immune response** of microglia and bring it back to **normal levels**, attributing to the substance a protective function on brain cells.

Obviously, the road to introducing a new drug is long and involves several steps. Now the researchers have explained that they will have to **do more research and tests**, understand the possible safe dosages and investigate the possible differences between the two sexes. This does not change the fact that "PNA5 seems **to be able to stop or delay** to some extent the progression of Parkinson's, improve the health of brain cells and block the process that causes their death", explain the researchers.



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