

Scientists find a new way to treat Alzheimer's disease

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Scientists at Nanyang Technological University in Singapore have made an important discovery that could lead to new treatments for Alzheimer's disease, the most common form of dementia.

They found a key “energy switch” in immune cells called microglia, which are vital for brain health. These cells help clear toxic proteins that build up in the brain, a process that is often impaired in people with Alzheimer's.

Microglia are the brain's cleaning crew, clearing away waste and harmful proteins like beta-amyloid, which is linked to Alzheimer's. However, in Alzheimer's patients, microglia often become damaged and lose their ability to function properly.

The researchers discovered that a protein called the translocator protein, found in the energy-generating parts of microglia, plays a crucial role in powering these cells. Without enough of this protein, microglia run out of energy and can no longer remove toxic waste effectively.

When the translocator protein is missing, an enzyme called hexokinase-2 becomes active. This enzyme helps microglia produce energy by breaking down sugar, but it leads to an inefficient way of generating energy.

Over time, this inefficient energy production worsens microglia's ability to function, which can contribute to the progression of Alzheimer's.

To address this problem, the researchers created a tool that uses blue light to “turn off” one of the enzyme’s harmful functions. By targeting a genetically modified version of hexokinase-2 with light, they blocked the enzyme’s ability to stick to the energy-generating parts of microglia.

This forced the cells to stop using the inefficient energy production method. As a result, the microglia regained their ability to clear beta-amyloid, improving waste removal by nearly 20%.

This discovery shows that targeting the metabolism of brain immune cells could be a promising approach to treating Alzheimer’s disease.

The researchers aim to develop drugs that can selectively adjust the way microglia generate energy, making them more efficient and restoring their ability to protect the brain.

Alzheimer’s disease currently has no cure, and treatments focus on slowing symptoms rather than addressing the root cause. By improving how microglia function, this research could open the door to more effective therapies.

The significance of this discovery is clear when considering the growing number of people affected by Alzheimer’s. According to the World Health Organization, an estimated 78 million people worldwide will have dementia by 2030.

Alzheimer’s is the most common type of dementia, causing memory loss, confusion, and difficulties with daily activities. As the global population ages, the need for new treatments becomes more urgent.

While much work remains to be done before this discovery can be turned into a practical treatment, it offers hope for tackling the underlying mechanisms of Alzheimer’s.

In the meantime, other research suggests that lifestyle changes, such as eating a diet rich in antioxidants or incorporating coconut oil, may help support brain health and reduce the risk of dementia.

The study was led by Lauren H. Fairley and her team and published in the Proceedings of the National Academy of Sciences. This breakthrough is another step toward better understanding Alzheimer’s and finding ways to combat its devastating effects.

If you care about Alzheimer's, please read studies about Vitamin D deficiency linked to Alzheimer's, vascular dementia, and Oral cannabis extract may help reduce Alzheimer's symptoms.

For more information about brain health, please see recent studies about Vitamin B9 deficiency linked to higher dementia risk, and results showing flavonoid-rich foods could improve survival in Parkinson's disease.

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