

Researchers explore new approach for treating Alzheimer's disease

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It is estimated that about 35 million people worldwide currently suffer from dementia and it is expected that the number will increase to 135 million by the year 2050. The disease is already one of the most common health problems in the elderly, which is why experts predict that the numbers of people affected will increase over time. Researchers at the Department of Psychiatry and Psychotherapy of the University Medical Center of Johannes Gutenberg University Mainz (JGU) have recently gained new insights into how it may in future be possible to treat patients with the currently most common form of dementia, Alzheimer's disease. It seems that a drug that is actually approved for treatment of the dermal disorder psoriasis stimulates the activity of the enzyme ADAM10 in the brain of Alzheimer's patients. There is already good evidence from basic research that this enzyme should be capable of suppressing Alzheimer's disease-related effects such as impaired cerebral function and that it thus might improve learning and memory capacity in patients.

The results of the related study have recently been published in the journal *Neurology*.

According to estimates of the German Alzheimer's Association (DAIzG), approximately 1.5 million [dementia patients](#) currently live in Germany. Some 1 to 1.2 million of these suffer from Alzheimer's. Medicine is currently only able to treat the symptoms of the disease and delay its progress and thus also the need for increased nursing care. No curative therapy has yet been developed. This means that Alzheimer's

disease remains one of the biggest challenges to modern medicine and is an important field for research.

There is still no consensus on what triggers the most common form of the disease, late-onset Alzheimer's. However, it is generally accepted that the activity of certain enzymes called secretases plays a role here. These enzymes cleave proteins on cell membranes, releasing the products of this cleavage process into the extracellular space. What happens in Alzheimer's is that there is increased cleavage of the amyloid precursor protein by beta-secretase, leading to the formation of amyloid-beta peptides. These peptides aggregate, damage [nerve cells](#), and are the main component of the so-called Alzheimer's plaques that accumulate in the brains of [patients](#). The alpha-secretase ADAM10 is a competitor of beta-secretase. It cleaves the [amyloid precursor protein](#) in such a way that the synthesis of amyloid beta-peptides is prevented while the growth factor APPs-alpha, which protects nerve cells, is released.

Taking this information as their starting point, Dr. Kristina Endres and Professor Falk Fahrenholz of the Department of Psychiatry and Psychotherapy of the Mainz University Medical Center have decided to take a new approach to the treatment of Alzheimer's. Working in collaboration with Professor Klaus Lieb and Professor Andreas Fellgiebel, both also working at the Department of Psychiatry and Psychotherapy, and with the cooperation of Professor Stefan Teipel and his team at the German Center for Neurodegenerative Diseases (DZNE) in Rostock, the researchers have demonstrated that oral administration of a psoriasis medication in a group of Alzheimer's patients results in elevated levels of APPs-alpha in their spinal fluid. This is interpreted as a stimulation of the activity of the alpha-secretase ADAM10, which in turn would result in the reduced accumulation of Alzheimer's plaques. In animal models of Alzheimer's disease, it has also been shown that ADAM10 enhances learning and [memory capacity](#). The medication was well-tolerated by the patients. In order to further investigate the effect of

the test substance on cognitive performance and to establish whether it can be used as a long-term treatment for Alzheimer's patients, larger clinical trials in which the substance is administered for longer periods will need to be undertaken.

Provided by Universitaet Mainz

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