

New chemical approach to treat Alzheimer's

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Scientists at the University of Liverpool and Callaghan Innovation in New Zealand have developed a new chemical approach to help harness the natural ability of complex sugars to treat Alzheimer's disease.

The team used a new chemical method to produce a library of sugars, called heparan [sulphates](#), which are known to control the formation of the proteins in the brain that cause memory loss.

Heparan sulphates are found in nearly every cell of the body, and are similar to the natural blood-thinning drug, [heparin](#). Now scientists have discovered how to produce them chemically in the lab, and found that some of these sugars can inhibit an enzyme that creates small [proteins in the brain](#).

These proteins, called amyloid, disrupt the normal function of cells leading to the progressive memory loss that is characteristic of Alzheimer's disease.

Professor Jerry Turnbull, from the University's Institute of [Integrative Biology](#), said: "We are targeting an enzyme, called BACE, which is responsible for creating the [amyloid protein](#). The amyloid builds up in the brain in Alzheimer's disease and causes damage. BACE has proved to be a difficult enzyme to block despite lots of efforts by drug companies."

"We are using a new approach, harnessing the natural ability of sugars, based on the blood-thinning drug heparin, to block the action of BACE."

Dr Peter Tyler, from Callaghan Innovation, added: "We have developed new chemical methods that have allowed us to make the largest set of these sugars produced to date. These new compounds will now be tested to identify those with the best activity and fewest possible side effects, as these have potential for development into a drug treatment that targets the underlying cause of this disease."

There are more than 800,000 people in the UK, and 50,000 in New Zealand living with dementia. Over half of these have Alzheimer's disease, the most common cause of dementia. The cost of these diseases to the [UK economy](#) stands at £23 billion, more than the cost of cancer and heart disease combined. Current treatments for [dementia](#) can help with symptoms, but there are no drugs available that can slow or stop the underlying disease.

Provided by University of Liverpool

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