A protein activated by the cold could lead to breakthrough Alzheimer's treatment, study finds

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A protein activated in response to the cold can prevent the loss of connections between brain cells in neurodegenerative diseases, reports a study published in Nature today (14th January, 2015).

Reducing body temperature can protect the brain from damage and this study has identified a critical protein involved in the process, opening up the possibility of developing new drug treatments for diseases like Alzheimer's.

Professor Giovanna Mallucci and colleagues at the Medical Research Council's Toxicology Unit investigated the brain's response to intensive body cooling similar to that seen in hibernating animals. They found that the protective processes normally switched on by cooling were defective in mice with either Alzheimer's disease or prion disease. This process involves turning on a 'cold-shock' protein called RBM3 which did not happen sufficiently in mice with neurodegeneration.

By artificially boosting the levels of RBM3 in the brain, the researchers were about to prevent the loss of brain cell connections in the Alzheimer's disease and prion disease mice. Moreover, in the mice with prion disease, turning on RBM3 also reduced memory loss and extended their lifespan.

Alzheimer's Society comment:

Dr Doug Brown, Director of Research and Development at Alzheimer's Society said:

'We know that cooling body temperate can protect the brain from some forms of damage and this method is being investigated as a treatment for acute conditions such as strokes and brain injury. It's interesting to see this protective mechanism now also being studied in neurodegenerative disease.

'Connections between brain cells - called synapses - are lost early on in several neurodegenerative conditions, and this exciting study has shown for the first time that switching on a cold-shock protein called RBM3 can prevent these losses. While we don't think body cooling is a feasible treatment for long-term, progressive conditions like Alzheimer's disease, this research opens up the possibility of finding drugs that can have the same effect. We are very much looking forward to seeing this research taken forward to the next stage.'

- Ends -

Notes to editors:

225,000 will develop dementia this year, that's one every three minutes

Alzheimer's Society research shows that 850,000 people in the UK will have a form of dementia by 2015. In less than ten years a million people will be living with dementia. This will soar to two million people by 2051

Dementia costs the UK economy over £26 Billion per year. This is the equivalent of more than £30,000 per person with dementia.

Alzheimer's Society champions the rights of people living with dementia and the millions of people who care for them

Alzheimer's Society works in England, Wales and Northern Ireland

Alzheimer's Society supports people to live well with dementia today and funds research to find a cure for tomorrow. We rely on voluntary donations to continue our vital work. You can donate now by calling 0845 306 0898 or visiting alzheimers.org.uk

Alzheimer's Society provides a National Dementia Helpline, the number is 0300 222 11 22 or visit alzheimers.org.uk

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