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Australia suggests use of ultrasound therapy as promising treatment for Alzheimer's disease

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A significant step towards personalised, effective therapies for neurodegenerative disorders



Australia's University of Queensland (UQ) researchers have found targeting amyloid plaque in the brain is not essential for ultrasound to deliver cognitive improvement in neurodegenerative disorders.

Dr Gerhard Leinenga and Professor Jürgen Götz from UQ's Queensland Brain Institute (QBI) said the finding challenges the conventional notion in Alzheimer's disease research that targeting and clearing amyloid plaque is essential to improve cognition.

"Previous studies have focused on opening the blood-brain barrier with microbubbles, which activate the cell type in the brain called microglia which clears the amyloid plaque. But we used scanning ultrasound alone on mouse models and observed significant memory enhancement", Dr Leinenga said.

The finding shows ultrasound without microbubbles can induce long-lasting cognitive changes in the brain, correlating with memory improvement.

Professor Götz said the study also revealed the effectiveness of ultrasound therapy varied depending on the frequency used.

The researchers tested two types of ultrasound waves, emitted at two different frequencies, and found that the higher frequency showed superior results, compared to frequencies currently being explored in clinical trials for Alzheimer's disease patients. The researchers hope to incorporate the findings into Professor Götz's pioneering safety trial using non-invasive ultrasound to treat Alzheimer's disease.