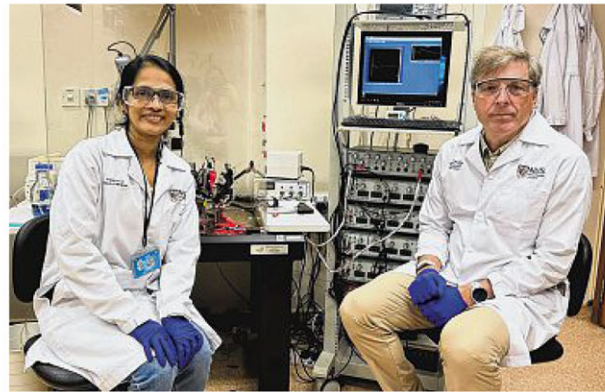


Molecule may help defend against Alzheimer's disease: NUS study



Dr Sheeja Navakkode and Professor Brian Kennedy in the Healthy Longevity Translational Research Programme's laboratory at the NUS Yong Loo Lin School of Medicine. PHOTO: NUS MEDICINE

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A local study has shown that a naturally occurring molecule, which is commonly studied for its anti-ageing effects, could improve communication between brain cells and restore key memory-related brain functions impaired by Alzheimer's disease.

Professor Brian Kennedy, who led the study, said the research suggests the molecule, known as calcium alpha-ketoglutarate (CaAKG), a safe and natural compound, may one day complement existing approaches to protect the brain and slow memory loss.

"Because AKG is already present in our bodies, targeting these pathways may offer fewer risks and broader accessibility," he noted.

"Thanks to that, we may have a powerful new strategy to delay cognitive decline and support healthy brain ageing," added Prof Kennedy, chair of the Healthy Longevity Translational Research Programme at the NUS Yong Loo Lin School of Medicine (NUS Medicine).

The NUS Medicine study was published in the journal *Aging Cell* in September 2025, and the ultimate aim is to test the efficacy of the compound in patients.

With many people here spending almost a decade in poor health towards the end of their lives, scientists at NUS Medicine have been researching how ageing itself can be modified to prevent age-related diseases such as Alzheimer's.

AKG is a naturally occurring metabolite essential for basic cellular functions, whereas CaAKG is a supplemental form of this metabolite.

While AKG has been shown to extend lifespan in lower organisms such as roundworms and fruit flies, studies in mice indicate that CaAKG is associated with lifespan extension and improvements in healthspan, the researchers said.

In the study, the researchers found that CaAKG not only repairs the weakened signals between neurons but also restores associative memory, a type of short-term memory and one of the early abil-

ities lost to Alzheimer's.

As AKG levels naturally fall as people age, replenishing this molecule could be a promising way to support healthier brain ageing and lower the risk of neurodegenerative diseases, Prof Kennedy said.

This is likely the first study that examined the effects of CaAKG in the context of Alzheimer's disease-related pathology, using pre-clinical models.

Prof Kennedy said the next aim is to validate these findings in different laboratory models of Alzheimer's disease and, ultimately, in human studies.

Prof Kennedy and his research team are actively pursuing research on CaAKG and AKG to better understand their roles in ageing.

Both AKG and CaAKG can already be found in commercial supplements, but human studies regarding their anti-ageing effects remain limited.

"At this stage, it would be premature to suggest that seniors could be prescribed CaAKG supplements alongside brain exercises or other interventions to prevent Alzheimer's disease or slow memory loss," said Prof Kennedy.

Additional studies, including human clinical trials, are needed, he said.

Assistant Professor Ch'ng Toh Hean from Nanyang Technological University's Lee Kong Chian School of Medicine and School of Biological Sciences, who studies the biology of long-term memory formation, said he found the results very intriguing and promising.

The scientists showed that by adding CaAKG on brain slices obtained from mice with Alzheimer's-like symptoms, they were able to restore some of the synaptic deficits in how brain cells communicate, through conducting experiments on a cellular model often used to study the molecular mechanisms of memory, he said.

However, as with many in-vitro studies using therapeutic compounds, further tests – especially behavioural studies in animals – must be performed to complement the in-vitro results, he said.

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