

Study finds mushrooms magnify memory by boosting nerve growth

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Researchers found lion's mane mushroom improved brain cell growth and memory in pre-clinical trials. Credit: UQ

Researchers from The University of Queensland have discovered the active compound from an edible mushroom that boosts nerve growth and enhances memory.

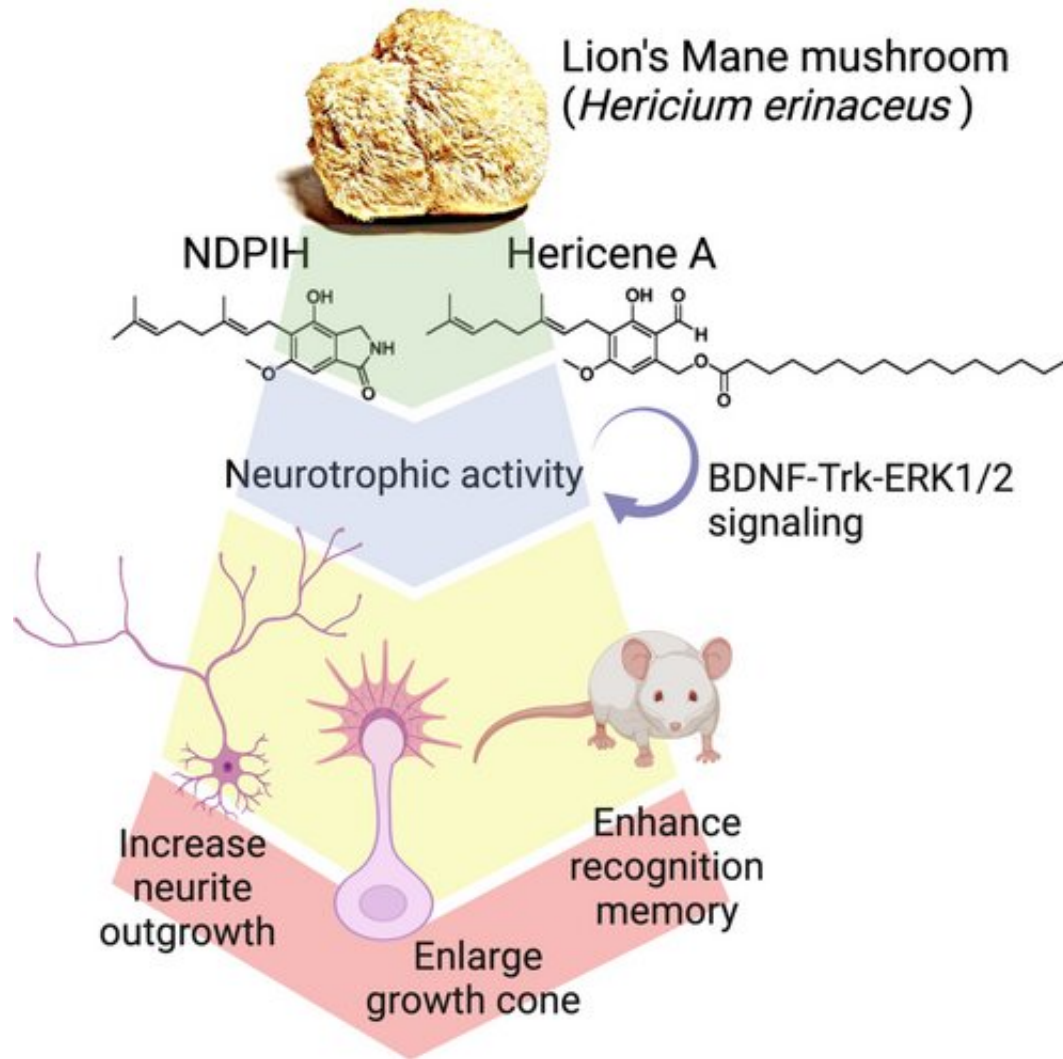
Professor Frederic Meunier from the Queensland Brain Institute said the team had identified new active compounds from the mushroom, *Hericium erinaceus*.

"Extracts from these so-called 'lion's mane' mushrooms have been used in [traditional medicine](#) in Asian countries for centuries, but we wanted to scientifically determine their [potential effect](#) on [brain cells](#)," Professor Meunier said.

"Pre-clinical testing found the lion's mane mushroom had a significant impact on the growth of brain cells and improving memory.

"Laboratory tests measured the neurotrophic effects of compounds isolated from *Herichium erinaceus* on cultured brain cells, and surprisingly we found that the active compounds promote neuron projections, extending and connecting to other neurons.

"Using [super-resolution microscopy](#), we found the mushroom extract and its active components largely increase the size of growth cones, which are particularly important for brain cells to sense their environment and establish new connections with other neurons in the brain."



Graphical abstract. Credit: *Journal of Neurochemistry* (2023). DOI: 10.1111/jnc.15767

Co-author, UQ's Dr. Ramon Martinez-Marmol said the discovery had applications that could treat and protect against neurodegenerative cognitive disorders such as Alzheimer's disease.

"Our idea was to identify bioactive compounds from natural sources that could reach the brain and regulate the growth of neurons, resulting in improved memory formation," Dr. Martinez-Marmol said.

Dr. Dae Hee Lee from CNGBio Co, which has supported and collaborated on the research project, said the properties of lion's mane mushrooms had been used to treat ailments and maintain health in traditional Chinese medicine since antiquity.

"This important research is unraveling the molecular mechanism of lion's mane mushroom compounds and their effects on brain function, particularly memory," Dr. Lee said.

The study was published in the *Journal of Neurochemistry*.

More information: Ramón Martínez-Mármol et al, Hericerin derivatives activates a pan-neurotrophic pathway in central hippocampal neurons converging to ERK1 /2 signaling enhancing spatial memory, *Journal of Neurochemistry* (2023). [DOI: 10.1111/jnc.15767](https://doi.org/10.1111/jnc.15767)

Provided by University of Queensland

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