Researchers buoyed by molecule's potential to slow Parkinson's progress

26 January 2017

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A naturally occurring molecule in the brain, when used as a therapy, may hold a key to stopping the progression of Parkinson's disease, new research has found.

The potent anti-inflammatory effects of the molecule activin A were shown in laboratory trials to offer protection against the loss of dopamine neurons, the brain cells that are destroyed in Parkinson's disease.

UTS Professor of Neuroscience Bryce Vissel, who led the research, said the findings were an important step in understanding why the death of certain nerve cells occurs in Parkinson's and how that might be arrested.

"Despite decades of research, the underlying causes of Parkinson's remain unknown and the most effective treatment is only symptomatic and comes with its own set of complications over time.

"We've taken activin A, a growth factor that occurs naturally in the body, applied it into the brains of mice in laboratory tests and found exciting beneficial effects."

Professor Vissel said the molecule's anti-inflammatory effects in the brain add fuel to the idea that inflammation is a key factor in the disease's development.

"This study shows that activin A can slow loss of dopamine nerve cells, providing a possible approach to slowing the disease. An exciting aspect of our previous research is that we've shown the activin A molecule has the potential to trigger regeneration in the nervous system. It raises the question as to whether this could lead to a treatment that could also repair the damaged brain areas in Parkinson's disease."

One in 350 Australians suffer from Parkinson's disease, a chronic and incurable neurodegenerative condition characterised by a range of symptoms including tremor, muscle rigidity and gait disturbance. Most patients are aged over 60 at diagnosis, but one in five is of working age and one in 10 is younger than 40.

Dr Sandy Stayte, a neuroscientist who co-led the research and has researched Parkinson's disease with Professor Vissel for almost a decade, said a significant obstacle in treating patients was the lack of any therapy that can prevent or slow Parkinson's disease.

"Often, sufferers have lost 70 per cent or more of their dopamine neurons and have serious movement problems by the time they're diagnosed. The gold standard treatment, levodopa, works on those symptoms but it does nothing to arrest the progress of the disease.

"Our goal is to try to slow down or halt further degeneration in the brain by protecting the surviving neurons."

Dr Stayte said there was a lot of work being done

on early indications of disease, such as identifying pre-motor symptoms and biomarkers.

"There is a much higher chance of being able to deliver a therapeutic strategy that will halt the cell-death process if we can identify the disease earlier."

Jo-Anne Reeves, CEO of Parkinson's NSW, said: "Parkinson's NSW is committed to supporting local researchers find new treatments and ultimately a cure for this devastating disease through our annual seed grant program. We congratulate Professor Vissel and Dr Stayte on their contribution to advancing Parkinson's research."

More information: Sandy Stayte et al. Activin A Inhibits MPTP and LPS-Induced Increases in Inflammatory Cell Populations and Loss of Dopamine Neurons in the Mouse Midbrain In Vivo, *PLOS ONE* (2017). DOI: 10.1371/journal.pone.0167211

Provided by University of Technology, Sydney