

A new way of controlling dyskinesia?



Project information

Lead researcher	Professor Peter Jenner
Location	Kings College London
Cost	£171,011 over three years
Start date	July 2008
Type of project	Project grant
Project code	G-0804

Project background

Almost everyone who has Parkinson's will be prescribed the drug levodopa at some point in their treatment. It works very well and can usually completely control a person's movement-related symptoms for a while. But most people who have been taking levodopa for a few years can experience severe side effects such as:

- **wearing off** – when the effects of levodopa start to fade before it is time for the next dose
- **on/ off effects** – this is when a person's response to levodopa begins to fluctuate. They find themselves switching quite suddenly between being 'on' and able to move, and being 'off' and immobile
- **dyskinesia** or uncontrollable jerky movements

Problems like these are disabling, tiring and painful for people with Parkinson's. Tackling them will greatly improve how people cope with everyday life. At the moment, little can be done to relieve dyskinesia. However, there are two potential ways of treating this common side effect. Firstly, we may be able to control it after it has already appeared. Or secondly, it may be possible to prevent dyskinesia from occurring at all. Unfortunately, over the

years, researchers have made no real progress in developing a drug that has either of these effects.

What the researchers are doing

Prof Jenner and his team believe they can overcome dyskinesia based on a chance discovery involving a chemical called nitric oxide. People with Parkinson's have high levels of nitric oxide in their brains. Too much of this chemical affects how dopamine is released from nerve cells and appears to damage the brain.

Prof Jenner is experimenting with an enzyme that makes nitric oxide in cells, which is called nitric oxide synthase (NOS). They were excited to find that drugs which stop NOS from working also appear to abolish dyskinesia in animals with symptoms like those seen in Parkinson's. So if these drugs can help to overcome dyskinesia in animals, it is possible that they may be able to do the same in people with Parkinson's.

But before we can develop treatments, the researchers need to need to find out about how dyskinesia is caused in the first place and then to understand the link between nitric oxide, nerve cells and dyskinesia. They will be testing specific drugs in rats and monkeys with Parkinson-like symptoms to see if the drugs can prevent dyskinesia occurring during Parkinson's drug therapy.

How the research will help people with Parkinson's

If successful, this research could lead to the development of an effective drug to treat and/or prevent dyskinesia. Although the initial studies will be carried out in animal models of Parkinson's, we hope that they will eventually be tested in people with Parkinson's. Managing this common side effect would prolong the usefulness of Parkinson's drugs and improve the lives of many thousands of people.

For more information, please talk to the Research Team

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