

Breakthrough in the search for new treatments for multiple sclerosis

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Scientists at The University of Nottingham have discovered a molecular mechanism which could bring about the development of new treatments for Multiple Sclerosis (MS) -- a chronic inflammatory disease of the central nervous system.

Dr Bruno Gran, a Clinical Associate Professor in the Division of Clinical Neurology in the School of Clinical Sciences, working in collaboration with Professor Paul Moynagh from the National University of Ireland, Maynooth, has discovered a synthetic [chemical compound](#) which inhibits the pro-inflammatory signals produced by the immune system in MS. What makes this chemical unique is that at the same time, it stimulates the body to produce [interferon-beta](#), an anti-inflammatory molecule, that is commonly given to patients as an injected drug to treat MS.

Together, these effects cause significant reduction in the severity of an [animal model](#) of MS. The researchers have also discovered that cells of the immune system obtained from the blood of people with MS are more sensitive to the effects of this drug than those obtained from people who do not have MS.

Dr Gran said: "Under laboratory conditions we have found a way of encouraging the body to produce its own Interferon-beta. When other experimental substances have been tested in the laboratory to achieve this effect, they usually cause the immune system to produce a mixture of anti-inflammatory as well as pro-inflammatory molecules, typically reducing the overall efficacy. In the case of the compound tested in this

study (a synthetic [cannabinoid](#) known as R(+)-WIN55,212-2), the predominantly anti-inflammatory effects appear promising for further pre-clinical, and hopefully clinical, testing.

With no available cure MS is the focus of intense study for the hundreds of scientists across the world who are working on new treatments for this disabling disease. MS is more common in temperate climates. With around 100,000 people suffering from MS in the UK the country has one of the highest rates of the disease in the world.

Until 20 years ago there was little progress in the search for treatments.

After their first approval in 1993 Beta Interferons still represent one of the first line treatments for relapsing-remitting [multiple sclerosis](#). These drugs are not a cure but they can reduce the number and severity of relapses. Despite this, more effective, well tolerated therapeutic strategies are needed.

Dr Gran's research continues a line of investigation which his laboratory has carried out for a number of years on the role of endogenous type I interferons in regulating multiple sclerosis inflammation in the [central nervous system](#).

The cause of MS is still something of a mystery. Numerous factors are thought to contribute, including genetic susceptibility and environmental factors. The latter are thought to include certain viral infections and low levels of vitamin D, linked to poor sun exposure.

These latest findings highlight a new selective mechanism that may be open to exploitation in the development of new therapeutics for the treatment of MS.

Provided by University of Nottingham

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