

MS drug prevented fatal heart condition in lab study

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A drug used to treat multiple sclerosis may also be effective at preventing and reversing the leading cause of heart attack, a new study has found.

Scientists found that Gilenya, a drug recently approved in the US for treating MS, was effective at reversing the symptoms of ventricular hypertrophy in mice.

Ventricular hypertrophy is a fatal cardiac disorder that can result in an [abnormal heart rhythm](#) (arrhythmia) and cardiac arrest. It is caused by sustained pressure on the [heart](#) due to stresses or diseases, such as hypertension ([high blood pressure](#)), valvular heart disease or [myocardial infarction](#) (heart attack), and is the leading cause of [sudden cardiac death](#) worldwide.

Researchers from The University of Manchester and the University of Illinois at Chicago have discovered that enhancing the activity of an enzyme molecule called Pak1 that is found naturally in our bodies using Gilenya produced remarkable results in mice with ventricular hypertrophy.

Study co-author Dr Xin Wang, a Lecturer in Molecular Cardiology in Manchester's Faculty of Life Sciences, said: "[Cardiac hypertrophy](#) is the pathological state to respond to sustained stresses on the heart resulting in increases in ventricular wall thickness and muscle mass of the heart. The condition is often associated with fatal complications, such as, [heart](#)

[failure](#) and rhythm disorders, such as ventricular arrhythmias, leading to millions of deaths worldwide each year.

"Our research had previously identified the effect of Pak1 in preventing tissue damage caused by reduced blood flow to the heart, known as cardiac ischemic injury. This latest study used mice with a genetic modification of the Pak1 gene to show how the enzyme, when stimulated by Gilenya, prevented and even reversed the symptoms of ventricular hypertrophy."

The research, led in Manchester by Dr Ming Lei, Dr Xin Wang and Dr Elizabeth Cartwright, and in Chicago by Professor John Solaro and Dr Yunbo Ke, is published in the leading cardiovascular journal, *Circulation*.

Dr Lei, who is based in Manchester's Faculty of Medical and Human Sciences, added: "In recent years, escalating costs, risks, and uncertainty associated with drug development for treating cardiovascular diseases have posed daunting challenges to the pharmaceutical industry. Our discovery opens up fresh avenues for developing a new class of drug for treating several fatal heart conditions. The novel effect of this existing drug means that we have the potential to accelerate the availability of a new therapy for patients with these heart conditions."

More information: 'Pak1 as a Novel Therapeutic Target for Antihypertrophic Treatment in the Heart,' published in *Circulation*, [doi:10.1161/CIRCULATIONAHA.111.048785](https://doi.org/10.1161/CIRCULATIONAHA.111.048785)

Provided by University of Manchester

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