

# Hormone drug could cure asthma and other fibrosis-related diseases

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Relaxin is the hormone that aids women to give birth – produced by the ovaries during pregnancy it ensures that the pelvic ligaments soften, for a brief time, long enough to push the baby out.

Key to this process is Relaxin's ability to break down [collagen](#), which is also the main characteristic of [scar tissue](#) or fibrosis. Fibrosis-related diseases account for up to 45% of deaths globally, with fibrotic scarring present in everything from thickened arteries in heart disease to damaged lung walls in asthma.

While there are some therapies available that counter the build-up of fibrosis, they only delay disease progression. What is needed is a drug that can safely and cheaply reverse the scar tissue build-up in these diseases.

On World Asthma Day (May 3), when it is estimated that 334 million people globally have the disease, new research reveals that a group of Melbourne scientists may have found a drug that can reverse the damage caused by asthma.

Scientists have long believed Relaxin could be a way to reverse those diseases that are caused by the build-up of collagen – acting on , say, scarred heart tissue in the same way it does in the pelvic muscle of [women](#) about to give [birth](#).

While clinical trials are currently underway internationally into using a recombinant drug-based form of the Relaxin [hormone](#) to treat patients with acute heart failure – there are concerns over the synthetic hormone being used, which is expensive and laborious to produce, as it has a two-chain structure like insulin.

A collaboration of researchers has developed and evaluated a single-chained form of Relaxin that eliminates all these concerns being cheap to produce and safe. The single-chain Relaxin, currently under a provisional patent application, was produced by Dr Akhter Hossain, Head of the Insulin Peptide Laboratory at the Florey Institute of Neuroscience and Mental Health, and then further characterised by scientists from Monash University's Biomedicine Discovery Institute (BDI) and the Monash Institute for Pharmaceutical Sciences.

According to BDI's Associate Professor Chrishan Samuel, the co-lead author on the paper recently published in the journal, *Chemical Science*, the discovery of this "new type" of Relaxin is a major breakthrough in

the potential treatment of fibrosis (scar tissue) related disease.

Monash scientists tested the modified Relaxin hormone in animal models of heart failure and asthma. To their surprise they found that administering the new hormone intranasally to animals with chronic allergic airways disease (equivalent to asthma in humans) completely reversed established disease after nine weeks of onset. In addition the scientists showed that the modified Relaxin had selected activity unlike "normal" Relaxin," and was easier to modify to improve its drug-inducing effects. The modified Relaxin appears to be safe, it is cheap to manufacture and it appears to have significant anti-fibrotic capabilities, which could have major implications for disease treatment," Associate Professor Samuel said.

Provided by Monash University

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