

Sex drug 'effective' as heart failure treatment

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A drug used to treat erectile dysfunction has been found by University of Manchester scientists to slow or even reverse the progression of heart failure in sheep.

The British Heart Foundation funded study is a breakthrough in the [treatment](#) for the disease in which five year survival rates are lower than most common cancers.

The study of Tadalafil—which is in the same class as Viagra—proves that the [drug](#) is biologically effective as a treatment for [heart](#) failure in sheep.

However, lead author Professor Andrew Trafford argues the effect is likely to also be shown in humans. The study is published in the journal *Scientific Reports*.

Heart failure is a devastating condition, occurring when the heart is too weak to pump enough blood to meet the body's needs.

It also causes a build-up of fluid that backs up into the lungs, resulting in breathlessness as well fluid retention, resulting in swelling of different parts of the body.

Most current treatments are ineffective.

"This discovery is an important advance in a devastating condition which causes misery for thousands of people across the UK and beyond," said Professor Trafford.

"We do have limited evidence from [human trials](#) and [epidemiological studies](#) that show Tadalafil can be effective in treating heart failure.

"This study provides further confirmation, adds mechanistic details and demonstrates that Tadalafil could now be a possible therapy for heart failure.

"It's entirely possible that some patients taking it for er`ectile dysfunction have also unwittingly enjoyed a protective effect on their heart."

Sheep were used by the team as the physiology their hearts is similar to

human hearts.

When the animals had heart failure—induced by pace makers—which was sufficiently advanced to need treatment, the team administered the drug. Within a short period the progressive worsening of the heart failure was stopped and, importantly the drug reversed the effects of heart failure.

And the biological cause of breathlessness in heart failure- the inability of the heart to respond to adrenaline was almost completely reversed.

The dose the sheep received were similar to the dose humans are given when being treated for [erectile dysfunction](#).

Tadalafil blocks an enzyme called Phosphodiesterase 5 or PDE5S for short, which regulates how our tissue responds to hormones like adrenaline.

The research team found that in heart failure, the drug altered the signalling cascade—a series of chemical reactions in the body—to restore the hearts ability to respond to adrenaline.

And that increases the ability of the heart to force blood around the body when working harder.

Professor Trafford added: "This is a widely used and very safe drug with minimal side effects.

"However we would not advise the public to treat themselves with the drug and should always speaking to their doctor if they have any concerns or questions.

"Tadalafil is only suitable as a treatment for systolic heart failure—when

the heart is not able to pump properly—and there may be interactions with other drugs patients are taking."

Professor Metin Avkiran, Associate Medical Director at the British Heart Foundation, said:

"Viagra-type drugs were initially developed as potential treatments for heart disease before they were found to have unexpected benefits in the treatment of erectile dysfunction. We seem to have gone full-circle, with findings from recent studies suggesting that they may be effective in the treatment of some forms of heart disease—in this case, heart failure.

"We need safe and effective new treatments for heart failure, which is a cruel and debilitating condition that affects almost a million people in the UK. The evidence from this study—that a Viagra-like drug could reverse [heart failure](#)—should encourage further research in humans to determine if such drugs may help to save and improve lives."

More information: Phosphodiesterase 5 inhibition improves contractile function and restores transverse tubule loss and catecholamine responsiveness in heart failure, *Scientific Reports* (2019).

Provided by University of Manchester

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