

## Research to shed new light on how statins benefit heart patients

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A scientist at Leeds whose research is challenging conventional thinking on how the cholesterol-reducing drugs statins benefit cardiac patients, has secured funding to further investigate her findings.

Dr Sarah Calaghan from the University's Faculty of Biological Sciences has been awarded £80,000 from Heart Research UK to progress her preliminary evidence that statins are directly affecting the heart muscle cell.

“For a long time the cardiovascular benefits of statins were considered to be due to reducing cholesterol in the blood, which prevents the build-up of plaques in arteries - a major cause of heart attacks and strokes. But more recently it's becoming clear that this is not the only way statins work,” she says.

The widely acclaimed family of drugs are known to have beneficial effects for patients at risk of cardiovascular disease and those with established cardiovascular disease, saving up to 9,000 lives a year(1).

Dr Calaghan's research suggests that statins are actually having a direct effect on heart cells, specifically the caveolae - tiny indentations in the cell membrane. Caveolae contain signalling molecules that Dr Calaghan has shown to have an active role in controlling the pumping mechanism of the heart.

“Caveolae need cholesterol to exist and our research has shown that if

cholesterol is removed from the membrane then the caveolae will collapse. This disrupts the function of caveolae-based signalling molecules and affects the heart's pumping mechanism and its ability to change its force of contraction," she explains.

In a healthy person, the heart's rate and force of contraction is increased by adrenaline during exercise or stress – producing what is known as the 'fight or flight' response.

"We know that statins are beneficial," says Dr Calaghan. "But it's really important to know exactly why and how they are affecting the heart cells, since the hearts of patients with cardiac disease respond differently to adrenaline than healthy hearts.

"Our new research hopes to determine exactly how statins affect caveolae and what impact this has on the way the heart behaves both at rest and during conditions of stress or exercise."

"If we can do this it will help us to understand the disease process better, and this in turn has important implications for the development of new ways to treat heart diseases."

Source: University of Leeds

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