Protein may protect against heart attack

14 July 2017

DDK3 could be used as a new therapy to stop the build-up of fatty material inside the arteries

A naturally occurring protein, dickkopf-related protein 3 (DKK3), could hold the key to protecting against heart attacks and strokes caused by atherosclerosis, according to new research by King's College London researchers.

The study, which was funded by the British Heart Foundation (BHF) and published in the journal *Circulation*, suggests that the protein could ultimately be used to prevent heart attacks and strokes.

Scientists measured the level of DKK3 in blood samples collected from 574 people over five years. They found that those people with higher levels of DKK3 were less likely to develop atherosclerosis over the course of the five year period and were also less likely to die from a heart attack or stroke.

This correlation was independent of other atherosclerosis risk factors such as high blood pressure and cholesterol levels.

Atherosclerosis is the build-up of fatty material inside the arteries. When this material breaks down a blood clot can form blocking the blood supply to the heart or brain, causing a heart attack or stroke.

Mice bred to be genetically deficient in the DKK3 protein also developed larger, less stable atherosclerotic plaques than those who could produce the protein.

DKK3 deficient mice were also less able to regrow the endothelial lining coating their blood vessels after it had been damaged. This suggests that DKK3 is able to protect against atherosclerosis by helping the endothelial lining repair itself at the first sign of damage, before any fatty deposits can build up.

Professor Qingbo Xu, John Parker Chair of Cardiovascular Sciences at the BHF Centre of Research Excellence, King's College London, said: 'Our work suggests that we could use a simple blood test to find seemingly healthy people who are at risk of heart attack, and would not routinely be identified as at risk by their GP.

'Ultimately it may also be possible to boost DDK3 levels and protect people against the fatty build ups which can cause a heart attack or stroke.'

Professor Jeremy Pearson, Associate Medical Director at the British Heart Foundation, said: 'Each year in the UK there are around 200,000 hospital visits due to heart attacks. This research shows that it might be possible to treat the root cause of this devastating disease, ultimately saving lives.

'By identifying a new protective molecule this research may lead to new medicines to further reduce the risk of a heart attack.'

Provided by King's College London