

New research explains how estrogen could help protect women from cardiovascular disease

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The sex hormone oestrogen could help protect women from cardiovascular disease by keeping the body's immune system in check, new research from Queen Mary, University of London has revealed.

The study has shown that the female sex hormone works on white blood cells to stop them from sticking to the insides of blood vessels, a process which can lead to dangerous blockages.

The results could help explain why cardiovascular disease rates tend to be higher in men and why they soar in women after the menopause.

The researchers compared white blood cells from men and pre-menopausal women [blood donors](#). They found that cells from [premenopausal women](#) have much higher levels of protein called annexin-A1 on the surface of their white blood cells.

The scientists also found that annexin-A1 and oestrogen levels were strongly linked throughout the menstrual cycle.

White blood cells play a vital role in protecting the body from infections. When they are activated they stick to the walls of blood vessels. This process normally helps the cells to tackle infection but if it happens too much, it can lead to blood vessel damage, which in turn can lead to cardiovascular disease. However, when annexin-A1 is on the surface of

these white blood cells, it prevents them from sticking to the blood [vessel wall](#).

The new research shows that oestrogen can move annexin-A1 from inside the white blood cell, where it is normally stored, to the surface of the cells, thereby preventing the cells from sticking to [blood vessel walls](#) and causing [vascular damage](#). This may have important implications in cardiovascular disease.

Dr Suchita Nadkarni from the William Harvey Research Institute, Queen Mary, University of London, who led the research, said: "We've known for a long time that oestrogen protects pre-menopausal women from heart disease, but we don't know exactly why. This study brings us a step closer to understanding how natural oestrogen might help protect our blood vessels.

"We've shown a clear relationship between oestrogen levels and the behaviour of these [white blood cells](#). Our results suggest that oestrogen helps maintain the delicate balance between fighting infections, and protecting arteries from damage that can lead to cardiovascular disease.

"Understanding how the body fights heart disease naturally is vital for developing new treatments."

More information: The study is published today in American Heart Association journal *Arteriosclerosis, Thrombosis and Vascular Biology*.

Provided by Queen Mary, University of London

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