

Substance in cancer medicine could prevent heart attacks

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Substance in cancer medicine could prevent heart attacks. Credit: Photo: University of Gothenburg

A substance in medicines for cancer and epilepsy could also prevent heart attacks, according to researchers at the Sahlgrenska Academy at the University of Gothenburg, Sweden, who have been using it to stimulate the body's own defense system against blood clots.

Heart attacks are normally caused by the formation of a blood clot in one of the [blood vessels](#) that supply the heart with [oxygen](#) and [nutrients](#). The clot reduces the supply of oxygen, which can very quickly result in [irreparable damage](#) to the heart.

The body's own protection

The body has a natural defence system to prevent [blood clots](#) – the fibrinolytic system – which "sprays" a special enzyme over the clots to break them down before they manage to obstruct the vessel. However, in order to function properly, this system needs sufficient quantities of the enzyme to be stored in the vessel wall. Unfortunately these stores are often depleted because of hereditary and lifestyle factors, such as high blood pressure, smoking and overweight, which probably increases the risk of a [heart attack](#).

New ways of preventing heart attack

Researchers at the University of Gothenburg's Sahlgrenska Academy have been looking at a way to stimulate the clot-dissolving system. The results are promising and open the door to new ways of preventing heart attacks.

"We're trying to find a medicine that boosts the stores of the enzyme as this probably would help the body to prevent heart attacks," says Pia Larsson at the Sahlgrenska Academy, who is basing her thesis on the study.

Stimulates enzyme production

Previously tested substances have proved unsuitable, mainly because of their unwanted side-effects. In the present study the Sahlgrenska researchers used HDAC inhibitors, substances new to this particular context, and managed to stimulate production of the relevant enzyme.

"We found that treatment with HDAC inhibitors dramatically increased production of the clot-dissolving enzyme, and that this occurred at far lower concentrations than expected," says Larsson.

Side-effects well known

The advantage of HDAC inhibitors is that they are already used in medication for illnesses such as [epilepsy](#) and [cancer](#), which means that their pharmacological properties and side-effects are known. Larsson says that more research is needed before a drug to prevent heart attacks can be launched.

"Our trials have been carried out on cultured cells from the vessel wall and we can't guarantee that the cells, when present in the body, will behave in exactly the same way. The results must therefore be tested on people before we can draw any firm conclusions."

Furhter investigation

The Sahlgrenska researchers are therefore preparing the first in a series of studies on human subjects to further investigate the effect of HDAC inhibitors on the clot-dissolving enzyme.

Provided by University of Gothenburg

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