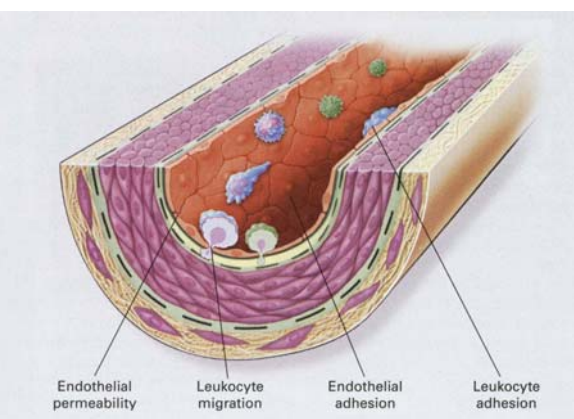


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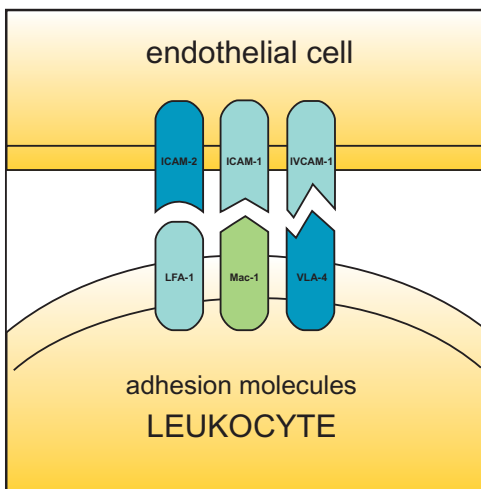


Plant foods for healthy hearts

Can polyphenols reduce the “stickiness” of blood vessel walls?

The first step in the development of atherosclerosis is the attachment of circulating white blood cells, **leukocytes**, to the cells lining the blood vessels **endothelial cells**. This is caused by an increase in the number of adhesion molecules present on the surface of these cells, making them more “sticky”.

Adding quercetin, or its metabolites found in the bloodstream after eating some onion soup, to cell cultures of endothelial cells or leukocytes inhibits the expression of these adhesion molecules, suggesting that these compounds may help slow down the development of atherosclerosis.



Adhesion molecule interactions

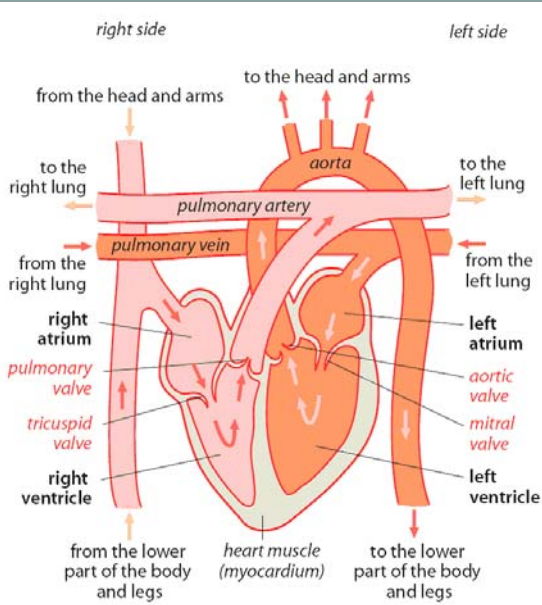
Does it work in the whole body?

Having shown that pure compounds have a beneficial effect on endothelial cells we now want to see whether treating cells with blood plasma obtained from volunteers who have eaten some polyphenol-rich foods has a similar effect - or even better, since there will be a mixture of compounds present.

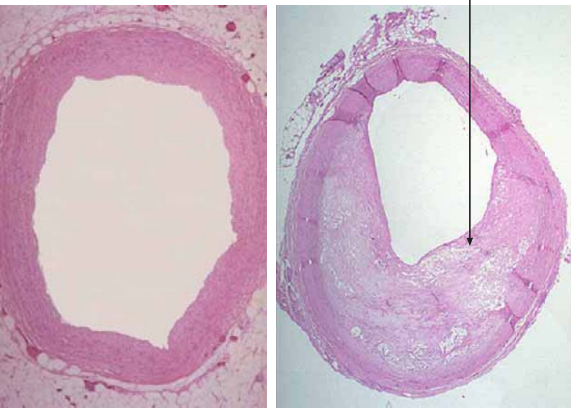
We will compare the response of the cells treated with blood plasma taken just prior to the meal with that obtained with plasma taken afterwards (the blood samples will be taken at the time when the compounds we’re interested in are at their highest concentration in the bloodstream).



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fat deposits restrict the blood flow



Phytochemicals and your circulation

What are Phytochemicals?

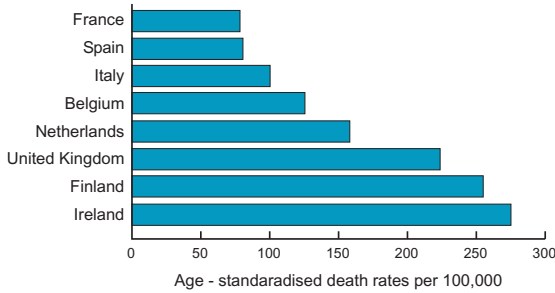
- 'phyto' = Greek word meaning plant
- So phytochemicals are naturally occurring chemicals produced by plants
- They occur in all parts of the plant; petals, skin, leaves, stems, seeds, roots and are often brightly coloured
- Form a non-essential part of our diet

What can phytochemicals do for us?

- reduce the chance of narrowed arteries (protect fats from oxidation)
- reduce the chance of blocked arteries (lower blood clot formation)
- keep blood vessels flexible and healthy

Can help to reduce the risk of heart disease and strokes

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Cardiovascular disease

The UK has one of the highest rates of death from cardiovascular disease in the world - one British adult dies from the disease every three minutes. Heart attacks occur when blood flow to part of the heart is blocked, often by a blood clot, causing damage to the affected muscle. This is usually caused by **atherosclerosis** – a thickening and hardening of the artery walls caused by a build-up of “**plaque**” – made up of fat-engorged “foam” cells, cholesterol and other substances.

It is a slow, progressive disease which may begin in childhood, but its progression may be influenced by several factors, including what we eat. Diets rich in fruits and vegetables are associated with a reduced incidence of heart disease and we are looking at ways in which nutrients present in these foods might be protective in helping to maintain a healthy circulation.

