

# How beneficial polyphenols truly are?

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Credit: Ryan Ward

Scientifically proving the health benefits of polyphenols, particularly in reducing cardiovascular disease risks, can only be useful when taking into account how they fit in the body's complexity.

Eating fruit or having a glass of [red wine](#) is seen as offering health benefits. The benefits are often pinned on polyphenols, [natural chemicals](#)—found in foods—referred to as [flavonoids](#) and phenolic acids, but also fragments of [food proteins](#) called peptides. Until recently, there were a large number of food and beverage products containing polyphenols and peptides that were making health claims, but evidence has been lacking.

Now, scientists in Europe are to run experiments and clinical trials to work out what beneficial effects polyphenols and peptides can have on [cardiovascular disease risk](#) and also how they cause these effects, under the EU-funded [BACCHUS](#) research project. Examples include potentially healthy polyphenols from apples, [pomegranates](#) and oranges, and peptides found in certain wheat varieties and in specially processed eggs, as well as peptides produced during the dry-curing of pork meats.

Paul Kroon, project coordinator at the Institute of Food Research, Norwich, UK, hopes to see European food companies making health claims for heart health on their label which is backed up by clinical trials and evidence from the lab showing what is happening in the body.

The benefits of polyphenols are well-known but they may not be as easy to harness, according to experts. "There is good evidence, both from basic research and human studies that certain polyphenols can improve blood vessel relaxation and [lower blood pressure](#) in patients with heart disease and/or hypertension," notes Balz Frei of the Linus Pauling Institute at Oregon State University, USA.

However, he adds that polyphenols are not nutrients and are generally poorly absorbed. "The small amount that makes it into the body is rapidly metabolised and excreted in urine and bile. This is very different from vitamins and micronutrients, which the body needs for normal function and survival."

The rationale for the project is to avoid misleading claims on product containing such active substances. "It is important that consumers are protected from health claims that are not supported by good science." It is a challenge to tease out which compounds are causing which effects. Until last year, many products came with health claims, for example related to heart health, but the European Union cracked down on unsupported claims in September 2012.

Kroon hopes that the participation of food companies in the project will improve the design of the trials and provide access to improved foods for testing. "In my view a lot of claims made about certain products were difficult to substantiate," he adds. "Making a claim for example that foods have lots of antioxidant activity when measured in the laboratory is not sufficient, it is necessary to demonstrate that consumption of this food causes a measureable benefit in the body."

The trouble, Frei tells youris.com, is that numerous companies, especially in the nutraceutical field, have made unsupported or misleading claims about polyphenols. "One of them is the "high antioxidant value" of "superfruits" as measured by the so-called [ORAC assay](#), and how this high antioxidant content will translate into numerous health benefits in humans.

Polyphenols may have good antioxidant activity in vitro—in the test tube—but they are absorbed into the human body in such small amounts that they cannot make any significant contribution to antioxidant or free-radical scavenging activity in the human body, according to Frei. By far the two most effective dietary antioxidants are vitamins C and E, which are stronger, more effective antioxidants than polyphenols and accumulate in the human body in much higher concentrations."

Supporting health claims with science also means finding out the "how": how do the mechanisms by which the polyphenols and peptides are improving the suppleness and therefore health of arteries, lowering blood pressure or reducing high cholesterol levels. "We need to have plausible mechanisms showing how the ingested compound for which an effect is claimed is able to cause the observed effect," explains Kroon.

To truly understand the role dietary polyphenols can play in maintaining optimum health or reversing disease there is a need to know three factors, according to Roger Carder, therapeutics scientist at the William

Harvey Research Institute in London, UK, and author of [The Red Wine Diet](#). First, it is key to identify which polyphenols are important for mediating biological effects. Second, what is the ideal composition of products. And, third, the appropriate daily amount for maintaining health or treating disease. "The Bacchus project needs to make sure that when a product is tested there is a corresponding control product where only the "active component" has been removed without altering the composition of other polyphenols," he advises.

"Studies to understand the mechanism of action may be premature," he adds. He then concludes: "if the active components of a specific product are not yet known. It requires a strategy that first prepares products based on highly purified polyphenols, show [that] they have health-relevant biological effects in clinical trials, [and] then identify for those products what confers these effects."

## Overmatter

A previous large-scale analysis found that consumption of dark chocolate, soy protein containing substances known as isoflavone phytoestrogens, and black tea caused beneficial changes with regard to heart health measures. But for many other foodstuffs containing these plant compounds there was insufficient evidence. "We concluded that we needed more studies in humans, and we needed to increase the number of subjects involved in the studies and focus on getting the right end points," explains Paul Kroon, project coordinator at the Institute of Food Research, Norwich, UK

Kroon leads a study investigating whether health claims for their products can be supported by good science. Examples include potentially healthy [polyphenols](#) from apples, pomegranates and oranges, and peptides found in certain [wheat varieties](#) and in specially processed eggs. And even [peptides](#) produced during the dry-curing of pork meats.

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Provided by Youris.com

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