

How Apples Fight Colon Cancer

Fruit's benefits tied to plant compound that reduces precancerous lesions

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An apple a day may keep colon cancer away through a plant chemical that reduces precancerous lesions.

Researchers from the [French National Institute for Health and Medical Research](#) (INSERM) have shown that a class of [polyphenols](#) called procyanidins found in apples can significantly reduce precancerous colon lesions in lab rats.

"These studies not only offer insights into the mechanisms of the chemopreventive properties of these polyphenols, they also offer proof of their potential to prevent colon cancer," says Francis Raul, lead investigator of the study.

Apple split

Polyphenols are plant chemicals involved in producing certain proteins and giving some plants their color. They are considered antioxidants—chemicals that fight oxidation and prevent DNA, cell and tissue damage.

In 2000, researchers made headlines by discovering [evidence that such chemicals from apples can fight colon cancer](#). They found that apple skin extract inhibited colon cancer cells 43% while apple flesh extract inhibited colon cancer cells 29%.

For their study, Raul and colleagues looked more closely at which chemicals were responsible for such inhibition. The researchers split the polyphenols in apples into two general categories: Polyphenol monomers, which include [flavonoids](#), and polyphenol oligomers/polymers, including procyanidins, which are also found in red wine and cocoa.

The scientists then exposed cancer cells to each type of polyphenol. The monomer polyphenols didn't have any significant effect on cancer cell growth. But the procyanidins triggered cell signaling that halted cancer cell growth and spread.

To see if the treatment would work in a living organism, the scientists injected rats with a known colon carcinogen. The rats were then fed a mixture of water and apple-derived procyanidins. After six weeks, the rats had half the number of precancerous lesions in their colon as compared to rats who had received no treatment.

Targeting tumors

According to Raul, this knowledge might be helpful in targeting specific tumor growth, such as colon cancer.

"For now, our work suggests that eating the whole apple, including the skin, might offer some anticancer benefits," says Raul. "That is certainly something we can comfortably do without further study."

The research was presented in Seattle, Washington at the [Third Annual International Conference on Frontiers in Cancer Prevention Research](#), a meeting of the [American Association for Cancer Research](#).



Credit: Renee Comet/National Cancer Institute

Pick of the chemical crop : Of the many compounds in apples, procyanidins appear largely responsible for inhibiting colon cancer

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