

Cocoa could prevent intestinal pathologies such as colon cancer

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Cocoa is an excellent source of phytochemical compounds that have potential health benefits. Credit: Anjuli Ayer

A new study on living animals has shown for the first time that eating cocoa (the raw material in chocolate) can help to prevent intestinal complaints linked to oxidative stress, including colon carcinogenesis onset caused by chemical substances.

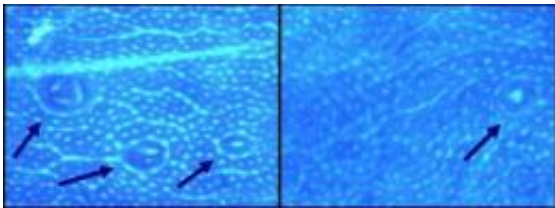
The growing interest amongst the scientific community to identify those foods capable of preventing diseases has now categorized cocoa as a 'superfood'. It has been recognised as an excellent source of phytochemical compounds, which offer potential [health benefits](#).

Headed by [scientists](#) from the Institute of [Food Science](#) and Technology and Nutrition (ICTAN) and recently published in the *Molecular Nutrition*

& *Food Research* journal, the new study supports this idea and upholds that cacao consumption helps to prevent intestinal complaints linked to oxidative stress, such as the onset of chemically induced colon [carcinogenesis](#).

"Being exposed to different poisons in the diet like toxins, mutagens and procarcinogens, the intestinal mucus is very susceptible to pathologies," explains María Ángeles Martín Arribas, lead author of the study and researcher at ICTAN. She adds that "foods like cocoa, which is rich in polyphenols, seems to play an important role in protecting against [disease](#)."

The study on live animals (rats) has for the first time confirmed the potential protection effect that flavonoids in cocoa have against colon cancer onset. For eight weeks the authors of the study fed the rats with a cocoa-rich (12%) diet and carcinogenesis was induced.



A cocoa-rich diet prevents the formation of aberrant crypt foci in the colon (marked with an arrow) induced by pro-carcinogen azoxymethane. Credit: ICTAN

Possible protection

Doctor Martín Arribas outlines that "four weeks after being administered with the chemical compound azoxymethane (AOM),

intestinal mucus from premalignant neoplastic lesions appeared. These lesions are called 'aberrant crypt foci' and are considered to be good markers of colon cancer pathogenesis."

The results of the study showed that the rats fed a cocoa-rich diet had a significantly reduced number of aberrant crypts in the colon induced by the carcinogen. Likewise, this sample saw an improvement in their endogenous antioxidant defences and a decrease in the markers of oxidative damage induced by the toxic compound in this cell.

The researchers conclude that the protection effect of cocoa can stop cell-signalling pathways involved in cell proliferation and, therefore, subsequent neoplasia and tumour formation. Lastly, the animals fed with the cocoa-rich diet showed an increase in apoptosis or programmed cell death as a chemoprevention mechanism against the development of the carcinogenesis.

Although more research is required to determine what bioactive compounds in cocoa are responsible for such effects, the authors conclude that a cocoa-rich diet seems capable of reducing induced oxidative stress. It could also have protection properties in the initial stages of colon cancer as it reduces premalignant neoplastic lesion formation.

A not-so-guilty pleasure

Cocoa is one of the ingredients in chocolate. It is one of the richest foods in phenolic [compounds](#), mainly in flavonoids like procyanidins, catechins and epicatechins, which have numerous beneficial biological activities in the prevention of cardiovascular diseases and cancer (mainly colorectal cancer).

In fact, compared to other foods with a high flavonoid content, [cocoa](#)

has a high level of procyanidins with limited bioavailability. These flavonoids are therefore found in their highest concentrations in the intestine where they neutralise many oxidants.

More information: Idefonso Rodríguez-Ramiro, Sonia Ramos, Elvira López-Oliva, Angel Agis-Torres, Miren Gómez-Juaristi, Raquel Mateos, Laura Bravo, Luis Goya, María Ángeles Martín. "Cocoa-rich diet prevents azoxymethane-induced colonic preneoplastic lesions in rats by restraining oxidative stress and cell proliferation and inducing apoptosis". *Molecular Nutrition & Food Research*, 55:1895-1899, diciembre de 2011. [DOI 10.1002/mnfr.201100363](https://doi.org/10.1002/mnfr.201100363)

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