

# Vegetables' health benefits increase when cooked with extra virgin olive oil

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The Natural Antioxidant Group of the University of Barcelona (UB) participated in this study. Credit: Universidad de Barcelona

Cooking vegetables in sofrito (sauté) with extra virgin olive oil favours the absorption and release of bioactive compounds of its traditional ingredients (garlic, onion and tomato), according to the study conducted by a research team of the Faculty of Pharmacy and Food Sciences at the University of Barcelona (UB), from the Physiopathology of Obesity and Nutrition Networking Biomedical Research Centre (CIBERObn) and the Diabetes and Associated Metabolic Diseases Networking Biomedical Research (CIBERDEM), led by the tenure lecturer Rosa M. Lamuela. These results, published in the science journal *Molecules*, allow an insight on the mechanisms with which gastronomy could play a relevant role in the health-improving effects of the Mediterranean Diet.

The Mediterranean diet, known for a high consumption of phytochemicals from vegetables, fruits and legumes, has been correlated to health-improving effects in cardiovascular and metabolic health. This relation is mainly based on the results of the PREDIMED study, a multicentre clinical trial carried out from 2003 to 2011 with more than 7,000 people and in which Rosa M. Lamuela took part too.

However, the effects regarding health in the Mediterranean diet have been hard to reproduce in non-Mediterranean populations, probably, according to the researchers, due differences in cooking practice. Therefore, researchers try to assess whether the Mediterranean gastronomy can bring health benefits, not only for its food but also for the way they are cooked.

## **Sofrito, a key element in the Mediterranean diet**

In this context, the objective of the study was to assess the effect of the extra virgin olive oil in bioactive compounds in tomato, onion and garlic –traditional ingredients in sofrito, one of the key cooking techniques in the Mediterranean diet. According to the researchers, this sauce has forty different phenolic compounds and a high amount of carotenoids, and its consumption is associated with an improvement of the cardiovascular risk parameters and [insulin sensitivity](#).

"The main result of the study is that cooking vegetables with [extra virgin](#) olive oil favours the bioactive compounds, such as carotenoids and polyphenols that are present in vegetables we find in sofrito, to move to the olive oil, which enables the absorption and bioactivity of these compounds," says Rosa M. Lamuela, director of the Institute for Research on Nutrition and Food Safety (INSA-UB).

## **From vegetables to olive oil**

The study also found out a new trait of [olive oil](#). So far, researchers had stated that this oil and onion can produce isomers –molecules with the same molecular formula but with different traits- from carotenoids, variants which are more bio-available and have a higher antioxidant capacity. However, the study proved that oil plays an essential role in this process, not only in carotenoids, but also in polyphenols, which go from vegetables to the oil.

## **Anti-inflammatory effects**

These results could explain the causes for which previous studies by this research group had stated that the presence of oil increases the anti-inflammatory effect in the tomato sauce. "We saw that this increase can occur due the migration of [bioactive compounds](#) (carotenoids and polyphenols) from the tomato to the oil during the cooking process,

which favours the absorption of these compounds," concludes José Fernando Rinaldi de Alvarenga, INSA-UB member and first author of the study.

**More information:** José Fernando Rinaldi de Alvarenga et al. Using Extra Virgin Olive Oil to Cook Vegetables Enhances Polyphenol and Carotenoid Extractability: A Study Applying the sofrito Technique, *Molecules* (2019). DOI: [10.3390/molecules24081555](https://doi.org/10.3390/molecules24081555)

Provided by University of Barcelona

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