

# New research into health benefits of coffee

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New research has brought us closer to being able to understand the health benefits of coffee.

Monash researchers, in collaboration with Italian coffee roasting company Illycaffè, have conducted the most comprehensive study to date on how free radicals and antioxidants behave during every stage of the coffee brewing process, from intact bean to coffee brew.

The team observed the behaviour of free radicals - unstable molecules that seek electrons for stability and are known to cause cellular and DNA damage in the human body - in the coffee brewing process. For the first

time they discovered that under certain conditions coffee can act as an antioxidant, a compound found in foods that helps stabilise free radicals.

The findings, published in *PLOS ONE*, will lead to a deeper understanding of the brewing process, as well as the potential health benefits of coffee.

Chief Chemist of Illycaffè, Dr Luciano Navarini, approached Monash physicist Dr Gordon Troup, School of Physics and Astronomy, and his team in 2012 to conduct the research using state-of-the-art EPR (Electron Paramagnetic Resonance) Spectroscopy.

"Dr Troup was one of the first scientists to discover free radicals in coffee in 1988 and so it made sense for Illycaffè – a world-leading coffee roasting company actively involved in coffee research – to collaborate with Dr Troup and his team on this significant piece of research into free radical and antioxidant behaviour in coffee," Dr Navarini said.

"The most important aim of this research was to better understand the development of stable free radicals during the roasting process and the possible influence exerted by developed radicals on the well-documented coffee antioxidant properties. We also wanted to evidence possible coffee constituents as a source of antioxidant activity."

Dr Troup worked with a team of researchers including Monash alumnus Dr Simon Drew from the University of Melbourne, who carried out the spectroscopy at the University of Melbourne.

"Our research studied both the Arabica coffee bean itself and what happens to its stable [free radical](#) and antioxidant properties during the brewing process," Dr Troup said.

"The findings provide a better understanding of the potential [health benefits](#) of coffee, as well as a deeper knowledge of the roasting process – ultimately leading to the highest quality cup of [coffee](#)."

**More information:** "Stable Radical Content and Anti-Radical Activity of Roasted Arabica Coffee: From In-Tact Bean to Coffee Brew" *PLoS ONE* 10(4): e0122834. [DOI: 10.1371/journal.pone.0122834](https://doi.org/10.1371/journal.pone.0122834)

Provided by Monash University

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