

NEWS RELEASE

Fancy a cuppa? UP study finds tea to be as antioxidant-rich as fruit and veg



Different foods contain different types of antioxidants, and a variety of antioxidants is needed to combat the negative effects of free radicals. Source: Shutterstock.

PRETORIA - University of Pretoria (UP) researchers have found that the [antioxidant](#) content of certain types of tea can be likened to that found in recommended portions of fruit and vegetables.

For the [study](#), which was published in [Toxicology](#), [Professor Zeno Apostolides](#) of UP's Department of [Biochemistry, Genetics and Microbiology](#) in the [Faculty of Natural and Agricultural Sciences](#) measured the amount of antioxidants in fruit, vegetables and tea against the amount found in a standard 200mg vitamin C tablet.

The result: an equivalent amount – and a compelling reason to incorporate tea into your diet.

“This does not mean that you can ditch your healthy eating habits,” Prof Apostolides cautions. “While tea made from the [Camellia sinensis](#) plant has considerable health benefits, tea should not be used as a substitute for fruit and vegetables under any circumstances, and should simply be used to supplement your diet.”

Prof Apostolides' research was conducted on 15 types of non-herbal tea and 10 types of herbal tea found in

supermarkets, as well as a variety of fruit and vegetables. The findings showed that just half a cup of [black tea](#), [oolong tea](#) or [green tea](#) contained the same amount of antioxidants with [radical scavenging capabilities \(RSC\)](#) as that of a 200mg vitamin C tablet. RSC refers to a substance's ability to neutralise harmful free radicals – unstable molecules that can cause cell damage. Antioxidants are compounds that counteract free radicals, preventing and slowing down the cell damage and cell death caused by them.

Furthermore, one cup of black, oolong or green tea contains the same amount of RSC as four servings of fruit or 12 servings of vegetables.

Different foods contain different types of antioxidants, and a variety of antioxidants is needed to combat the negative effects of free radicals.

"Free radicals are highly reactive, unstable molecules that are produced as a by-product of the body's natural metabolism processes," Prof Apostolides explains. "They only live for a fraction of a second, but during their short lifespan, they can damage the DNA inside your body's cells."

The damage that they cause can increase the risk of developing cancer and heart disease, among other health conditions. Free radicals are produced after the body has been exposed to harmful compounds in the environment, such as tobacco smoke, toxic chemicals or air pollution, or prolonged exposure to sun and ultraviolet light. A nutrient-poor diet can also produce free radicals.

"Free radicals can be either harmful or helpful, but a build-up of harmful free radicals (known as oxidative stress) can cause significant damage to the body's cells," Prof Apostolides says.

Oxidative stress causes damage to cell membranes, proteins, lipids and DNA. This damage negatively affects how the body's cells work and how they replicate. A negative effect on cell replication can cause mutations in DNA, thereby increasing the risk of developing cancer.

"The results of the study also showed that tea made from the *Camellia sinensis* plant contained a significantly larger amount of RSC than the amount found in herbal teas," Prof Apostolides says. "[Rooibos tea](#), however, is still a close second, with one and a half cups containing as much RSC as that of a standard vitamin C tablet."

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ABOUT THE UNIVERSITY OF PRETORIA

The University of Pretoria (UP) is one of the largest contact and residential universities in South Africa, with its administration offices located on its Hatfield Campus in Pretoria. This 115-year-old institution is also one of the largest producers of research in South Africa.

Spread over seven campuses, it has nine faculties and a business school, the [Gordon Institute of Business Science](#) (GIBS). It is the only university in the country with a [Faculty of Veterinary Science](#), which is ranked the best in Africa. UP has 120 academic departments and 92 centres and institutes, accommodating more than

56 000 students and offering about 1 100 study programmes. It has the most academic staff with PhDs (70%), NRF-rated researchers (613).

The 2025 Times Higher Education subject rankings placed UP first in South Africa in the fields of [Accounting](#) and [Finance](#); [Architecture](#); [Electrical and Electronic Engineering](#); Law; Sport Science; and Veterinary Science. UP's Faculty of Law has been ranked as the top law school in Africa for a remarkable eighth consecutive year.

Quacquarelli Symonds (QS) ranked the University among the top five in Africa, as part of their [2024 World University Rankings \(WUR\)](#). UP was the only South African university featured in the [2023 World University Rankings for Innovation \(WURI\)](#), falling within in the 101-200 range of innovative universities.

For more information, please go to www.up.ac.za