

Antioxidant effects of coffee by-products 500 times greater than vitamin C, research concludes

May 7 2015



The coffee industry plays a major role in the global economy. It also has a significant impact on the environment, producing more than 2 billion

tonnes of coffee by-products annually. Coffee silverskin (the epidermis of the coffee bean) is usually removed during processing, after the beans have been dried, while the coffee grounds are normally directly discarded.

It has traditionally been assumed that these by-products — coffee grounds and coffee silverskin, have few practical uses and applications. Spent coffee grounds are sometimes employed as homemade skin exfoliants or as abrasive [cleaning products](#). They are also known to make great composting agents for fertilizing certain plants. But apart from these limited applications, coffee by-products are by and large deemed to be virtually useless. As such, practically all of this highly contaminating 'coffee waste' ends up in landfills across the globe and has a considerable knock-on effect on the environment.

However, a UGR research team led by José Ángel Rufián Henares set out to determine the extent to which these by-products could be recycled for nutritional purposes, thereby reducing the amount of waste being generated, as well as benefitting coffee producers, recycling companies, the health sector, and consumers.

In an article published in the academic journal Food Science and Technology, the researchers demonstrate the powerful antioxidant and antimicrobial properties of the coffee grounds and silverskin, which are highly rich in fibre and phenols. Indeed, their findings indicate that the antioxidant effects of these [coffee grounds](#) are 500 times greater than those found in vitamin C and could be employed to create functional foods with significant health benefits.

Moreover, Professor Rufián Henares points out: "They also contain high levels of melanoidins, which are produced during the roasting process and give coffee its brown colour. The biological properties of these melanoidins could be harnessed for a range of practical applications,

such as preventing harmful pathogens from growing in food products." However, he also adds: "If we are to harness the beneficial prebiotic effects of the coffee by-products, first of all we need to remove the melanoidins, since they interfere with such beneficial prebiotic properties."

The researchers conclude that processed coffee by-products could potentially be recycled as sources of new food ingredients. This would also greatly diminish the environmental impact of discarded coffee by-products.

The Ministry of Economics and Finance has recently allocated a new research project to the team under the 'State R&D programme', in order to enable them to conduct further studies in the area and re-assess the potential value of [coffee](#) by-products.

More information: "Revalorization of coffee by-products. Prebiotic, antimicrobial and antioxidant properties," *LWT - Food Science and Technology*, Volume 61, Issue 1, April 2015, Pages 12-18, ISSN 0023-6438, [dx.doi.org/10.1016/j.lwt.2014.11.031](https://doi.org/10.1016/j.lwt.2014.11.031)

Provided by University of Granada

Citation: Antioxidant effects of coffee by-products 500 times greater than vitamin C, research concludes (2015, May 7) retrieved 20 March 2024 from <https://medicalxpress.com/news/2015-05-antioxidant-effects-coffee-by-products-greater.html>

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