

Pistachios make healthy decafs

June 23 2011, by Sara Coelho, PlanetEarth Online



If caffeine gets your blood pumping more than it should, here's a piece of good news: when roasted appropriately, pistachios can become a tasty and healthier substitute for coffee, with all the aromas and flavour and none of the undesirable effects.

Fresh [coffee beans](#), as they are picked from bushes in high-altitude [tropical regions](#), are nothing like the finished product that fuels millions of lives across the world. The reassuring smell of [coffee](#) and its familiar taste [blossom](#) only after a fair share of roasting.

Roasting triggers the aroma thanks to the release of [organic compounds](#) that exist as vapours, known as volatiles. Volatiles come with complicated names, but some are linked to very familiar aromas. Limonene smells of citrus, alpha-pinene gives a pine/turpentine scent and 5-methylfurfural is better described as a bouquet of caramel and

burnt sugar.

'Not all of the volatiles are responsible for aroma even if they are present in a high concentration,' says Mustafa Özel, a chemist based at the University of York. 'However some of the volatiles give a strong aroma even at a very low concentration – it just depends on which compound it is.'

If aroma depends on volatiles, is it possible to make two different things smell and taste similar?

Pistachio beans have many culinary uses. They can be eaten as snacks, added to bread recipes or used as cooking oil. In Turkey pistachios are sometimes roasted and ground to be used as a coffee substitute. Özel and his colleagues decided to explore what makes pistachios so like coffee.

'Roasting time and roasting temperature really affect the production of many volatile compounds,' explains Özel. 'As some particular compounds are mainly responsible for the characteristic aroma of the roasted product, you can manipulate which ones appear by altering the roasting time and temperature.'

The team took six handfuls of pistachios and roasted them on a frying pan at 200 degrees Celsius for different periods of time, from 5 to 25 minutes. One set of pistachios was left uncooked as a control. Then they grounded the beans to fit through a 1mm sieve and analysed the samples' chemical composition.

The idea was to see which volatiles are released at various stages of roasting and what is the ideal roasting time to produce the best aroma while keeping undesirable products to a minimum.

The results, published in Food Chemistry, show that pistachios tend to

produce the most volatiles after 20 minutes in a pan; after that the effect decreases. But most importantly, the pan-roast produces furans, furanones, benzene derivatives, pyrazines and other volatiles typical of coffee [aroma](#) and flavour.

The beans might be very different when raw but after roasting pistachios and coffee have indeed similar bouquets. This suggests that pistachios 'may provide an alternative for use in the coffee industry,' says Özel.

And a healthier one as well: 'There are lots of important anti-oxidants in pistachios, which are beneficial to health and they don't contain caffeine,' he adds. 'Therefore pistachio coffee could be said to be healthier than conventional coffee.'

The findings have interesting industrial applications. 'If the [pistachios](#) are processed to remove the excess oil, then they can be ground to a smaller size and commercialized as coffee substitutes more broadly,' Özel concludes.

This story is republished courtesy of [Planet Earth online](#), a free, companion website to the award-winning magazine Planet Earth published and funded by the Natural Environment Research Council (NERC).

More information: Gogus, F., Özel, M.Z., Kocak, D., Hamilton, J.F., Lewis, A.C., Analysis of roasted and unroasted Pistacia terebinthus volatiles using direct thermal desorption-GCxGC-TOF/MS, *Food Chemistry* (2011), [doi: 10.1016/j.foodchem.2011.05.003](https://doi.org/10.1016/j.foodchem.2011.05.003)

Provided by PlanetEarth Online

Citation: Pistachios make healthy decafs (2011, June 23) retrieved 4 May 2024 from <https://phys.org/news/2011-06-pistachios-healthy-decafs.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.