Moderate coffee consumption does not lead to dehydration

9 January 2014

New research, published today in the *PLOS ONE*, has found no evidence for a link between moderate coffee consumption and dehydration. The research, conducted by researchers at the University of Birmingham School of Sport and Exercise Sciences, UK, found that drinking moderate amounts of coffee does not result in dehydration and contributes to daily fluid requirements in regular coffee drinkers just as other fluids do.

Due to early research showing the acute effects of caffeine as a mild diuretic, there appears to be a common assumption that caffeinated beverages, such as coffee also have this effect(2). However, the effect of coffee consumption on fluid balance cannot be directly compared with that of pure caffeine. Interestingly, prior to publication of this new study only two studies had specifically investigated the effects of caffeine in the form of coffee on hydration status(3,4) with mixed and inconclusive results.

This is the first study to directly assess the effects of a moderate consumption of coffee compared to equal volumes of water. Sophie Killer a Doctoral researcher and lead author of the study commented: "Despite a lack of scientific evidence, it is a common belief that coffee consumption can lead to dehydration and should be avoided, or reduced, in order to maintain a healthy fluid balance. Our research aimed to establish if regular coffee consumption, under normal living conditions, is detrimental to the drinker's hydration status."

In a sample of regular coffee drinkers, Killer and colleagues measured the effects of moderate consumption of black coffee compared to the consumption of equal volumes of water on fluid balance and hydration status. Fifty male participants were tested in two phases, where they were required to drink four mugs (200ml) of either black coffee or water per day for three days. In the second phase, those who had initially drunk coffee switched to water and vice versa. The two phases were separated by a ten day 'wash out' period. Females were excluded from the trial to control against possible fluctuations in fluid balance resulting from menstrual cycles.

To assess hydration status, the researchers used a variety of well-established hydration measures including body mass and total body water, as well as blood and urine analyses. The researchers found no significant differences in total body water or any of the blood measures of hydration status between those who drank coffee and those who drank water. Furthermore, no differences in 24-hour urine volume or urine concentration were observed between the two groups.

"We found that consumption of a moderate intake of coffee, four cups per day, in regular coffee drinking males, caused no significant differences across a wide range of hydration indicators compared to the consumption of equal amounts of water," said Sophie Killer. "We conclude that advice provided in the public health domain, regarding coffee and dehydration, should be updated to reflect these findings."

More information: 1 Killer S.C., Blannin A.K. and Jeukendrup A.E. (2014). No evidence of dehydration with moderate daily coffee intake: a counterbalanced cross-over study in a free-living population, *PLOS ONE*. dx.plos.org/10.1371/journal.pone.0084154

2 Eddy, N. and Downs, A. (1928). Tolerance and cross-tolerance in the human subject to the diuretic effect of caffeine, theobromine, and thoephylline. J Pharmacol Exper The,r 33:167-174.

3 Neuhauser-Berthold, B.S., Verwied, S.C. and Luhrmann, P.M. (1997a). Coffee consumption and total body water homeostasis as measured by fluid balance and bioelectrical impedance analysis. Ann Nutr Metab 41:29-36.

4 Grandjean A, Reimers K, Bannick K, Haven M. The effect of caffeinated, non-caffeinated, caloric and non-caloric beverages on hydration. Journal of the American College of Nutrition 2000;19(5):591-600.

Provided by Kaizo
APA citation: Moderate coffee consumption does not lead to dehydration (2014, January 9) retrieved 31 August 2022 from https://medicalxpress.com/news/2014-01-moderate-coffee-consumption-dehydration.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.