- Ageing

Midlife coffee habit may lead to healthier aging

Genetic makeup shapes benefits of caffeine

The Korea Times · 9 Jun 2025 · 13

Regularly consuming coffee during middle age may provide a health boost for women as they get older, according to a finding based on preliminary analysis of tens of thousands of health records.

After combing through health data of more than 47,000 women collected over a 30-year period, researchers from Harvard's University's T.H. Chan School of Public Health said they have found evidence that women who drank moderate amounts of coffee in midlife were more likely to exhibit healthy aging, such as continued mental strength and sharpness in their later years.

An abstract of the study's preliminary results was presented at the American Society for Nutrition's NUTRITION 2025 conference in Orlando, Fla., by lead author Sara Mahdavi, a post-doctoral fellow at the school and an adjunct professor at the University of Toronto's Department of Nutritional Sciences.

Although the health benefits were evident among coffee drinkers, they were not repeated among women who reported drinking other caffeinated beverages such as tea and cola, Mahdavi reported.

The data used was culled from the Nurses' Health Studies, a landmark series of studies that have tracked lifestyle and health outcomes since 1976. They include regular follow-ups of study participants, repeating their assessments of health and lifestyle factors.

The Harvard researchers looked at caffeine intake reported by 47,513 participants who filled out validated food frequency questionnaires. They defined "healthy aging" as "living to age 70 or older, being free from 11 major chronic diseases, maintaining physical function, having good mental health, exhibiting no cognitive impairment and showing no memory complaints."

Using the NHS follow-up data, they narrowed the field to 3,706 women who met all the healthy aging criteria 30 years after first enrolling. Among them, subjects who said regular coffee was their primary source of caffeine had better odds (2 percent to 5 percent) of healthier aging outcomes in each of the defined domains.

Decaffeinated coffee and tea intake, however, were not associated significantly with odds of healthier aging in any areas, while cola intake was actually associated with worse healthy aging outcomes.

The study, which was funded by the National Institutes of Health, has yet to be submitted for the peer review process required for publication in a scientific journal, and thus it is considered preliminary.

Mahdavi told UPI the results suggest that caffeine in and of itself is not necessarily an ingredient for a healthier old age. Rather, the benefit appears to come from a still mysterious way in which it interacts with the chemical properties of the coffee.

"While caffeine itself may contribute to short-term alertness and vascular effects, coffee is a complex beverage containing hundreds of bioactive compounds," she said in emailed comments. "Many of these — including polyphenols like chlorogenic acids — have antioxidant and anti-inflammatory properties.

"It's possible that the synergy between caffeine and these compounds is key. This may help explain why we see health benefits with coffee but not with other caffeine sources like soda or energy drinks."

Meanwhile, an individual's genetic makeup also appears to play a role in how caffeine's benefits are translated into healthy aging.

A 2023 study co-authored by Mahdavi focused on how differing genetics can effect an individual's ability to metabolize caffeine. It found that a genetic variation in a protein called CYP1A2 can affect how quickly a person detoxifies and clears caffeine from their system, which in turn can affect the how it affects their health.

Stephen Safe, a professor of biochemistry and biophysics at Texas A&M University and a noted a researcher on the health benefits of coffee, said the Harvard study's findings of differing effects in coffee vs. cola "are somewhat confusing/contradictory conclusions" that perhaps point away from caffeine as the key variable.

"I think that there is a growing scientific literature that supports the role of many other components in coffee being associated with its health benefits," he told UPI. "For example, there is extensive published data on chlorogenic acids and other polyphenolics as health promoting agents.

"Some results do not fit this health-promoting activity of coffee and resolving these differences will require additional research," he said.

Mahdavi said her work is part of a broader effort to map out how individual genetics and can be tapped to tailor diets — an emerging field known as nutrigenomics, broadly defined as the study of how nutritional factors can protect the human genome from damage.

"I do believe we are moving toward a future where dietary advice can be tailored based on genetic and metabolic profiles," she said. "Our prior work in nutrigenomics has shown that individuals metabolize caffeine at different rates based on genetic variants, such as in the CYP1A2 gene.

"Understanding how people respond differently to the bioactive compounds in coffee could help optimize not just safety, but also health benefits — particularly as we learn more about how these compounds affect inflammation, vascular aging, and longevity pathways."