

博士後期課程 III期

令和 8 年度

武蔵野大学大学院 薬科学研究科 薬科学専攻 博士後期課程 入学試験問題 (3月8日)

[英語] 次の文章は、JAMAに掲載された論文の紹介記事である。文章を読み、各問に答えよ。

COFFEE LINKED TO SLOWER BRAIN AGEING IN LARGE STUDY

We are, as a species, especially fond of caffeine. Tea is the second-most commonly consumed beverage globally, after water, and most adults in the United States begin their day with coffee. And although many people consume caffeine for a jolt of energy, a study published today in *JAMA* suggests that the stimulant also has a longer-term brain benefit: keeping our minds sharp over time.

The study offers what the authors think is the longest-term data to date on the relationship between caffeine consumption and cognition. It found that moderate caffeine intake from coffee and tea was associated with reductions in both dementia risk and the rate of cognitive decline. Specialists praise the study for its size but note that the results should be interpreted with caution.

“This is a well-conducted study for the type of data available. However, because it uses observational, not experimental, evidence, the findings can only be considered suggestive,” says Naveed Sattar, a cardiometabolic medicine specialist at the University of Glasgow, UK.

More than a quick pick-me-up

Many studies have investigated the link between caffeine and cognition. But Yu Zhang, an epidemiologist at Harvard University in Cambridge, Massachusetts, and first author of the study, says that previous work followed participants over relatively short periods, whereas dementia builds over many decades.

For its work, Zhang’s group leveraged two decades-long health studies — the Nurses’ Health Study and the Health Professionals Follow-up Study — to track the caffeine-drinking habits of more than 130,000 health-care professionals over 43 years. Participants in these studies documented their diet every few years. They also filled out questionnaires about their cognitive function and took tests that required them to recount strings of words as an objective measure of cognition.

The team found that moderate consumption of caffeine, amounting to 2–3 cups of coffee or 1–2 cups of tea a day, was associated with the greatest reductions in dementia risk and rate of cognitive decline. But lower levels of consumption were also associated with brain benefits.

Contrary to past work, the association between caffeine intake and cognitive health held even in those who drank large amounts of coffee: dementia risk was 18% lower in people in the highest bracket of caffeine consumption — up to five cups of coffee a day — than in those who drank little or none.

Caffeine versus genetics

The protective association held true even for participants with a genetic variant called *APOE4*. Just one copy of this variant can raise a person's risk of developing Alzheimer's disease-related dementia by two to three times. The protection for those carrying *APOE4* surprised Shannon Kilgore, a neurologist affiliated with Stanford University in California. She says that the study's conclusions are otherwise “appropriate for an observational study-association”, reinforcing some existing conclusions while offering new clues.

The study's design means that ①it's not possible to conclude that coffee consumption reduces dementia risk, nor did the authors specify any mechanisms for their findings. But one thing that Zhang says interested the team was that people who drank decaffeinated coffee did not see any of the cognitive benefits observed in those who drank the caffeinated version. ②This suggests that the benefits are linked specifically to caffeine, rather than other compounds found in coffee that have been thought to be beneficial, such as chemicals called polyphenols and alkaloids.

Zhang is quick to note that, although the group attempted to control for the effect of confounding factors such as lifestyle choices and diet quality, there could be other things, such as medications, driving some of the findings. “The effect size is small and there are lots of important ways to protect cognitive function as we age,” he says. “Our study suggests that caffeinated coffee or tea consumption can be one piece of that puzzle.”

(*Nature* 650: 536, 2026より引用)

<英単語>

dementia: 認知症、cognition: 認知

問1 紹介している論文のキーとなる知見を表す一文を本文から抜き出して記しなさい。また、その文を和訳しなさい。

問2 紹介している論文が先行研究と比べて優れている点とその理由を、問題文の記載に基づいて簡潔に記しなさい（日本語で）。

問3 下線部①を和訳しなさい。

問4 下線部②を和訳し、文頭の This が表す内容を簡潔に記しなさい（日本語で）。