

Blood metabolites associated with coffee consumption may affect kidney disease risk

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Food and beverages may have important effects on kidney health, but the potential biological mechanisms involved are often unclear. New research in *CJASN* identifies several metabolites in the blood whose levels are altered by coffee consumption and may affect the risk of developing chronic kidney disease (CKD).

When Casey M. Rebholz, Ph.D., MS, MNSP, MPH (Johns Hopkins Bloomberg School of Public Health) and her colleagues examined [372 blood metabolites](#) in 3,811 participants in the Atherosclerosis Risk in Communities study, a prospective community-based cohort, they found that 41 metabolites were associated with coffee consumption. When the team analyzed these metabolites in an additional 1,043 adults in the Bogalusa Heart Study, a community-based long-term epidemiological study, 20 of the 41 metabolites were also associated with coffee consumption in this group.

Higher levels of 3 of these coffee-related metabolites were significantly associated with higher risks of developing CKD: glycochenodeoxycholate, O-methylcatechol sulfate, and 3-methyl catechol sulfate.

Glycochenodeoxycholate, a lipid involved in primary bile acid metabolism, may contribute to potentially beneficial effects of [coffee consumption](#) on kidney health. O-methylcatechol sulfate and 3-methyl catechol sulfate, which are involved in metabolism of the preservative benzoate, may represent harmful aspects of coffee on the kidneys.



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"A large body of scientific evidence has suggested that consuming a moderate amount of coffee is consistent with a healthy diet. We were able to identify one [metabolite](#) that supports this theory," said Dr. Rebholz. "There were 2 other metabolites associated with coffee that surprisingly were associated with a higher risk of incident [chronic kidney disease](#). These compounds were also associated with cigarette smoking, which may in part explain why these compounds were associated with higher risk of kidney disease."

With more research on the metabolic underpinnings of the coffee-kidney relationship, these metabolites may point to processes that are relevant for preventing kidney disease through dietary modifications.

An accompanying editorial notes that it would have been interesting to see how the study's results on metabolites associated with kidney disease after accounting for participants' self-reported consumption of coffee. "Integrating these [data types](#) should provide a better understanding of the role coffee and other diet factors play in the development of CKD or other diseases," the authors wrote.

More information: "Metabolites Associated with Coffee Consumption and Incident Chronic Kidney Disease," *CJASN*, [DOI: 10.2215/CJN.05520421](https://doi.org/10.2215/CJN.05520421)

"Coffee Metabolites and Kidney Disease Answers or More Questions?" *CJASN*, [DOI: 10.2215/CJN.12420921](https://doi.org/10.2215/CJN.12420921)

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