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One More Reason to Continue Drinking Coffee—It May Be Good for Your Skin

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Who does not love a study that validates one of life's habitual pleasures? Whether it is an iced latte, a double espresso, or simply a hot cup of brown liquid in the hospital cafeteria, many of us in medicine have an emotional attachment as well as a physiologic dependence on coffee.

In their article published in this issue of *JAMA Dermatology*, Li et al¹ report an inverse association between caffeine intake, particularly from coffee, and risk of incident rosacea. In this longitudinal cohort study of more than 82 000 participants with more than 1.1 million person-years of follow up, higher caffeine intake was associated with lower rosacea risk after adjustment for several confounders. Overall, participants who drank 4 cups of coffee per day were less likely to develop rosacea compared with participants who did not drink coffee. A dose-response association was found for both increasing caffeine and coffee intake. The authors hypothesized that caffeine's vaso-constrictive and immune suppressive effects might decrease the risk of rosacea.

Causation or Association?

Does drinking coffee actually protect from the development of rosacea, or are there alternative explanations to these findings? For example, could the findings be explained by systematic differences in people who drink or report drinking coffee, compared with those who do not? Confounding? Recall bias?

This is an observational study, not a randomized clinical trial (RCT), widely considered to be the gold standard in evaluating causal relationships. However, a randomized trial of long-term coffee drinking would be difficult to carry out—recruiting to the control group would be problematic for sure. Without an RCT we must rely on large, prospective cohort studies like this one as the next best option in evaluating these relationships. Reliable measurement of both the exposure and the outcome and establishing a temporal relationship between the 2 is essential. In this case, although exposure and outcome were self-reported, the participants were all trained nurses who maybe better suited than the general public to accurate

reporting. The analysis was conducted on incident rosacea over a long follow-up period, and the authors performed a sensitivity analysis increasing the required lag time between exposure and outcome to further support temporal relationship and address potential reverse causality. To control for potential confounding, the authors adjusted all analyses for age, race, postmenopausal hormone use, alcohol consumption, smoking, body mass index (BMI, calculated as weight in kilograms divided by height in meters squared), and physical activity, all of which could be implicated in rosacea. Importantly, the strength of the protective effect noted and dose-response relationship with increasing coffee and caffeine intake are convincing.

This study has its limitations, however. Notably, the Nurses' Health Study II is composed entirely of women, most of whom were white. Rosacea is more common in white individuals and in women, but this does limit the generalizability of these findings to other groups. Furthermore, the diagnosis of rosacea was self-reported at a single time point (2005), and participants were asked to remember their year of diagnosis (from 1991 to 2005). Finally, the food and beverage data were collected prospectively every 4 years, starting in 1991, when most participants were in their 30s. The analysis could therefore not assess lifetime intake but did use cumulative intake from 1991 forward.

Coffee and Health

So how does this study fit into the science on the overall health effects of drinking coffee? From a nutritional epidemiology standpoint, the case for drinking coffee is strong. In an umbrella review of meta-analyses published last year,² coffee seems to protect against cancer (including total cancer,³ as well as prostate cancer, endometrial cancer,⁴ melanoma,⁵ nonmelanoma skin cancer,⁶ and liver cancer⁷), cardiovascular disease (relative risk [RR], 0.85; 95% CI, 0.80–0.90 for 3.5 cups per day vs none⁸), type 2 diabetes (RR, 0.70; 95% CI, 0.65–0.75 for high vs low consumption⁹), chronic liver disease (RR, 0.62; 95% CI, 0.47–0.82 for regular consumption [any amount] vs none⁷), Parkinson disease (RR, 0.64; 95% CI, 0.53–0.76 for high vs low consumption¹⁰), Alzheimer disease (RR, 0.73; 95% CI, 0.55–0.97 for high consumption vs none¹¹), and depression (RR, 0.76; 95% CI, 0.64–0.91 for high vs low consumption¹²). Above all, coffee protects from all-cause mortality (RR, 0.86; 95% CI, 0.82–0.89 comparing 4 cups per day vs none¹³). Pregnancy is one of the few times in which higher coffee consumption (usually more than 3–4 cups daily) is a risk factor for adverse outcomes, including low birth weight, preterm delivery, pregnancy loss, and childhood leukemia.² For this reason, the American College of Obstetrics and Gynecologists currently recommends less than 200 mg of caffeine (1–2 cups of coffee) during pregnancy.¹⁴

Coffee or Caffeine?

Despite more than 200 published meta-analyses of coffee consumption outcomes, and too many original research articles to count, 1 key question remains: are the health benefits observed related to a unique property of coffee itself, the caffeine, or a combination of both? In the study by Li et al,¹ when caffeine intake was separated into coffee and noncoffee sources (tea, soda, chocolate), only coffee itself seemed to be protective. However, no decreased association was seen in decaffeinated coffee, suggesting caffeine matters. To

reconcile these findings, the authors postulate that a protective effect of coffee might be offset by the heat of the beverage in decaffeinated coffee, which lacks the protective caffeine effects. A recent study in the UK Biobank¹⁵ also attempted to address this question of coffee vs caffeine. Using a genetic score of established polymorphisms that affect caffeine metabolism, the authors evaluated the association of coffee intake with mortality. They found a protective effect of coffee in all-cause and cause-specific mortality with no evidence of effect modification in groups of different genetically predicted caffeine metabolism. Furthermore, the protective effects they reported were similar for decaffeinated coffee consumption. These findings suggest an intrinsic benefit to the coffee itself.

This study provides evidence that patients with rosacea need not avoid coffee, and it offers all of us 1 more reason to continue drinking coffee regularly. We will raise an insulated travel mug to that!

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