

## Medical News &amp; Perspectives | QUICK UPTAKES

## Coconut Oil's Health Halo a Mirage, Clinical Trials Suggest

Jennifer Abbasi

Clinical trials don't support the public's positive perception of coconut oil, a recent systematic review and meta-analysis suggests. The study, published in *Circulation*, found that compared with other vegetable oils, coconut oil increases low-density lipoprotein cholesterol (LDL-C)—the "bad" kind that ups cardiovascular disease risk—while offering no improvements to weight, blood glucose, or inflammation markers.

**Why This Matters**

Saturated fat raises LDL-C levels. Despite its high saturated fat content, coconut oil has attained a sort of cult status among home chefs over the past decade. In a 2016 *New York Times*-commissioned survey, 72% of the public said coconut oil is a healthful food. Tellingly, only 37% of nutritionists in the survey agreed.

"This represents a remarkable success in marketing by the coconut oil and related industries calling coconut oil a natural, healthful product, despite its known action to increase LDL cholesterol, an established cause of atherosclerosis and cardiovascular events," Frank M. Sacks, MD, of the Harvard T.H. Chan School of Public Health, wrote in an editorial on the new analysis.

If using coconut oil instead of other vegetable oils increases "bad" cholesterol, frequently swapping it in for them could put the public's heart health at risk.

**What We Already Knew**

According to the review's authors, clinical trials comparing the blood cholesterol effects of coconut oil and nontropical vegetable oils have had mixed results. Coconut oil appeared to lower LDL-C levels in some of the studies, while other trials showed the opposite. Some research also suggests that the plant fat might quell inflammation, control blood glucose, and even help people to lose weight.

Two years ago, European researchers published a review of 54 trials comparing different dietary fats' effects on blood lipids. They concluded that coconut oil did not raise LDL-C more than other vegetable

oils. The analysis included only 6 coconut oil trials, though, and wasn't designed to assess its other purported benefits.

**The Design**

The new analysis, by researchers in Singapore, included 17 clinical trials comparing coconut oil with at least 1 other fat. The most common nontropical oils in the studies were soybean oil, olive oil, safflower oil, and canola oil.

The trials included a total of 730 participants, most of whom were healthy or had normal cholesterol levels. The dietary interventions lasted at least 2 weeks, after which the researchers looked at effects on

- Blood lipids—LDL-C, high-density lipoprotein cholesterol (HDL-C), total cholesterol, and triglycerides (all trials)
- Body fatness measures—weight (8 trials), percentage body fat (5 trials), and waist circumference (4 trials)
- Inflammation markers—C-reactive protein (5 trials)
- Glycemia—fasting plasma glucose (4 trials)

**What We've Learned**

- Compared with nontropical vegetable oils, coconut oil significantly increased total cholesterol by 14.69 mg/dL, LDL-C by 10.47 mg/dL, and HDL-C by 4 mg/dL. What's more, the differences were still

significant when the researchers left out nonrandomized or poor-quality trials.

- Coconut oil did not significantly affect triglycerides or markers of glycemia, inflammation, and body fat compared with other nontropical vegetable oils.
- Compared with palm oil—another tropical oil—coconut oil also significantly increased LDL-C, HDL-C, and total cholesterol.
- Compared with butter, coconut oil significantly lowered LDL-C and increased HDL-C. However, only 1 study looked at butter and it provided cooking fats for food preparation instead of prepared meals, which could have affected participants' adherence.
- Based on LDL-C-lowering's clinical benefits demonstrated in other studies, the researchers calculated that the LDL-C increase of 10.47 mg/dL from coconut oil could translate to a 6% increase in the risk of major vascular events and a 5.4% increase in the risk of coronary heart disease mortality.

**A Caveat**

Some people believe that unrefined coconut oil's polyphenols improve inflammation and glucose homeostasis. But the researchers weren't able to assess this because most of the trials didn't report the type of coconut oil used.

**What About That HDL-C Improvement?**

It may not mean much. According to the authors, the idea that HDL-C lowers coronary heart disease risk increasingly is being questioned. A 2014 meta-analysis of clinical trials published in the *BMJ* struck a blow to the theory. In that study, which involved more than 100 000 patients, medications like niacin and fibrates that increase HDL-C didn't cut the risk of coronary heart disease mortality, heart attack, or stroke. Meritdelian randomization studies have sent the same message. People whose genes predisposed them to higher HDL-C levels didn't have a lower heart attack risk in a 2012 study in *The Lancet*.

In an email, Northwestern Medicine cardiologist and *JAMA* Senior Editor Philip Greenland, MD, said he agreed with the

authors: "This has been very puzzling about HDL for many years, but it is reaffirmed again and again. Efforts to raise HDL in a variety of ways have not led to beneficial clinical improvement."

Let's Not Forget Lauric Acid

The authors also addressed possible misconceptions about lauric acid, a saturated fatty acid that makes up about half of coconut oil's fatty acid content. Some proponents of the oil's widespread use argue that because lauric acid is a medium-chain fatty acid (MCFA), it doesn't affect LDL-C levels the same way that long-chain saturated fatty acids, like those in animal fats, do. Greenland explained: "MCFA are absorbed by the portal vein, thereby bypassing the liver, and therefore might be more heavily utilized for energy production rather than getting into the liver and affecting cholesterol synthesis."

According to the authors, however, there's evidence that lauric acid "may not

biologically act like other MCFA." Despite its classification as an MCFA, it's absorbed in the gut and goes into the liver, where it's incorporated into lipoprotein particles. "This handling of lauric acid is more similar to how long-chain saturated fatty acids are handled than MCFA," Greenland said.

The review also noted that the long-chain saturated fatty acids myristic acid and palmitic acid comprise 25% of coconut fat.

Tropical Diets Are Different

The authors also discussed another common argument: certain indigenous populations have low heart disease rates despite plentiful coconut consumption. Researchers have pointed out that these groups have different eating patterns than the average Western diet, with more heart-healthy fish and less processed food. Plus, these traditional diets feature raw coconut flesh or pressed coconut cream, which are lower in saturated fat than coconut oil.

The Bottom Line

From the authors: "Despite the rising popularity of coconut oil because of its purported health benefits, our results raise concerns about high coconut oil consumption. Coconut oil should not be viewed as healthy oil for cardiovascular disease risk reduction and limiting coconut oil consumption because of its high saturated fat content is warranted."

From Greenland: "In the lipid world, this issue has been thought to be settled a long time ago. It is reassuring to see that even as more data accumulated, the overall message really remains unchanged. Coconut oil offers no proven health benefits compared to other cooking oils and seems detrimental on important blood lipids. As such, the prudent approach would be to avoid it in comparison to other cooking oils that do not have these effects."

Note: Source references are available through embedded hyperlinks in the article text online.

...the model will offer medical patients new Part D plan choices under which a 30-day supply of insulin would cost no more than \$35 during the end-of-year benefit period. The model also includes a new Part D plan that would save an average of \$446 in annual out-of-pocket costs compared with what they currently spend under conventional Part D plans, monthly costs capped at \$100 each month because of the different role according to the CMS.

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