

Coconut Oil (with a primer on fat structure)

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Bottom Line at the Top: Coconut oil raises total and LDL-cholesterol levels, but may not be as bad for the heart and blood vessels as we thought previously. Is it a miracle food that should become the predominate fat in your diet? No.

Fad nutritionists recently popularized coconut oil, turning it into a purported health food and anti-aging body emollient. Pro-coconut oil articles claim that, when taken internally, it improves heart health, increases metabolism, promotes lean bodies and supports the immune system. I'll address these issues in this article. Other, cures-what-ails-you claims have so little supporting data that they aren't worth discussing here.

After years of hearing that coconut oil, rich in saturated fat, is bad for your cholesterol, some people now claim that Pacific Islanders' good health is due to their diets rich in coconut oil. Though there may be some validity to that conclusion, it would be difficult to prove, because of other behavioral variables. Pacific Islanders also eat a lot of nutrient-rich plant foods and rely on their feet, not their cars, for transportation. Exercise, fruits and vegetables can compensate for a lot of dietary faults.

Coconut oil's followers have donned cult-like attributes: One site claims that "there was a strong propaganda in 1970s spread by the corn oil and soy oil industry against coconut oil." That's paranoia, written in poor English and designed to inflame with absolutely no justification.

The 'propaganda' mentioned was actually many good scientific studies, which firmly established coconut oil as consistently cholesterol-raising. This valid and well-designed research was published in peer reviewed journals. The only problem with

their work was that they studied short-term outcomes, like cholesterol levels, rather than long-term end-points, such as illness and death.

Current studies reaffirm that coconut oil raises cholesterol levels, but note that individuals do vary in their response. Some people experience absolutely no change, while others note markedly increased cholesterol levels.

On the plus side, HDL-cholesterol (the 'good' one) bumps up, too. Or at least it doesn't go down, as happens with beef fat and lard. This might offset the bad effects of higher LDL-cholesterol levels, with less consequent harm to blood vessels and health.

So what sets coconut oil apart from lard in its effect on cholesterol? Coconut oil contains mostly medium-chain fatty acids which raise total, LDL-cholesterol (bad) and HDL-cholesterol (good) levels. Lard is full of long-chain fatty acids, which raise LDL-cholesterol, but not HDL-cholesterol.

To refresh your memory about fatty acids, chains and fats, the word 'chain' refers to the chain of carbons linked together to form a fatty acid. Three fatty acids attached to a glycerol molecule make a triglyceride. Mixtures of triglycerides make up the bulk of fats and oils. They also contain a few other minor fat-soluble substances.

Fatty acids come in short (4-6 carbons), medium (8-14 carbons) and long (≥ 16 carbons) -chain varieties. Short-chain fatty acids appear in foodstuffs in only tiny quantities. Coconut, palm and palm kernel are the major foods containing medium-chain fatty acids. Fish oil, animal fat and most vegetable oils (soy, corn, olive, etc) contain mostly long-chain fatty acids.

Fatty acids differ further according to how saturated (how many possible sites of bonding to the carbons

are 'saturated' with hydrogens) or unsaturated (missing some hydrogens) they are. Saturated fats are solid at room temperature. Regardless of chain length, they are used by the body entirely for energy production. They promote higher cholesterol levels and more clogged arteries. The body uses unsaturated fats for a variety of purposes, including cell structure, immune function and neurological signaling, in addition to providing energy.

Every fat contains a mixture of fatty acid types. We tend to characterize a fat by the fatty acid type that predominates, but that doesn't mean that it contains ONLY that fatty acid. For example, olive oil is 82% oleic acid, therefore we call it a long-chain, mono-unsaturated fatty acid fat, but it also contains 8 percent saturated fat and a variety of poly-unsaturated fatty acids. Only half of the fatty acids in fish oil are the extra-long chain types that quell inflammation, arrhythmias and depression.

Coconut oil is 91.5% medium-chain fatty acids, all saturated. Most of the remaining, long chain fatty acids are essential fatty acids (a good thing), but the quantity is very small. Coconut oil would have to supply over half your **total** calorie intake to meet your daily requirement for essential fatty acids. Hydrogenation turns essential fatty acids into saturated fatty acids, eliminating coconut oil's few healthful fatty acids.

If coconut oil does, in fact, induce less vascular disease than do other medium-chain and saturated-fatty acid-containing fats, it may be because of anti-oxidants dissolved in the oil. **In coconut oil, these anti-oxidants are phenolic compounds, which are capable of reducing inflammation in animals.**

We need further research to see if this translates to humans. Any claims about coconut oil being anti-bacterial are based on test tube tests, not data from live people.

Some extraction methods eliminate coconut oil's anti-inflammatory and anti-oxidative benefits. Wet-extracted, virgin coconut oil retains its beneficial anti-oxidant effects better.

Repeated high heat during cooking generates carcinogens and pro-oxidants. Rats fed re-heated coconut oil grow abnormal liver cells and generate

more peroxidized fat and reactive oxygen species and less protective anti-oxidant enzymes. Good reasons to not re-use cooking oil.

Some claim that coconut oil is slimming. A few studies seem to suggest that there is something to this, but the evidence is far from convincing. While equal calories from different fat sources have equal effect on body weight, **people consuming coconut oil tend to accumulate less abdominal fat** and have smaller waist-lines.

The science behind this probably relates to how the gut digests and absorbs fatty acids of different chain length. Short- and medium-chain fatty acids are absorbed directly into blood that flows immediately to the liver. The liver can burn them for energy or package them for transport into the blood stream for use elsewhere.

Long-chain fatty acids follow a different route: They pass from the gut into the lymphatic system and are packaged in little fat balls (chylomicrons) that raise blood triglyceride levels and can be metabolized for energy or directly deposited into body fat. Eventually they make it to the liver, but have lost much of the fatty acid content by that time. This sounds good, but doesn't really explain the differential fat deposition or why some people deposit more abdominal fat than do others.

Coconut oil is an effective skin and hair moisturizer. Is the effect really 'anti-aging' and biochemical youth, as claimed? – No, skin and hair just look better, which may be enough to satisfy most people.

One ounce of coconut oil (6 teaspoons), like all other oils, provides about 234 calories. Like other fats, it also contains various fatty acid esters, alcohols and derivatives, fat soluble bioflavonoids and vitamins E and K.

Should we shun coconut oil, as was recommended in the past? No. Should we embrace it as our major food oil? No. Should we eat Thai food now and then and include coconut oil in our choices for cooking? Yes. Enjoy. ¶