

## **Coconut Oil is One of Nature's Healthiest Oils: A Detailed Reply from the Asian and Pacific Coconut Community (APCC)**

(The Asian and Pacific Coconut Community (APCC) is an intergovernmental organisation established by United Nations articles and operating under the auspices of UNESCAP. The members of APCC are National Governments of 18 countries in Asia, Pacific, Africa and Caribbean. APCC looks after the interests of the coconut farmers, most of whom are small landholders, the development of the coconut industry, and the over 1 billion consumers of coconut products worldwide. Written August 25, 2018)

This brief article is a point-by-point rebuttal against the claims made by Dr. Karin Michels that coconut oil is a 'pure poison' and that there is no study that shows significant health benefits of coconut oil consumption. This article will provide evidence that coconut oil is not a poison, does not cause heart disease, and is in fact, one of the healthiest oils in the world.

### **False claim # 1. Coconut oil is 'pure poison'.**

The standard way of determining toxicity is to determine its lethal dose, called LD50. The European Commission has determined that coconut oil has an LD50 of about 23 g/kg [1]. According to this, the average 60 kg person will have to take almost 1.4 kg (or more than 1.5 liters!) of coconut oil to reach the toxic dose. Coconut oil is regarded as a food by Codex Alimentarius [2] and is classified as GRAS, or Generally Recognized As Safe, by the US FDA [3] and by all countries in the world. Given that Dr. Michels' is presumably a knowledgeable scientist, her claim that coconut oil is 'pure poison' without any proof can be only be considered as a highly unethical, irresponsible and malicious act. **APCC demands a retraction and apology from Dr. Karin Michels.**

### **False claim # 2. Coconut oil is a solid at room temperature and is therefore similar to butter and lard.**

This is a highly unscientific and misleading way of determining whether a fat or oil is saturated or unsaturated. Coconut oil is, in fact, a liquid at room temperature in the tropics (it solidifies at around 25 degrees Celsius or 77 degrees Fahrenheit). Since coconut oil is solid at the colder room temperature in temperate countries, this is used by detractors to instill fear that it will clog arteries. This is deliberate misinformation. Since body temperature is 37 degrees Celsius, coconut oil will certainly not solidify inside one's arteries. More important, the body's enzymes (lipases) will metabolize coconut oil almost immediately upon ingestion. This is basic chemistry and it is truly surprising that this fear is being propagated by Dr. Michels and the other detractors of coconut oil who are expected to know better. We note

that the *Dietary Guidelines for Americans* uses this very unscientific method to advise its public how to determine whether a food item is a saturated or unsaturated fat.

The standard scientific method of determining whether a fat or oil is saturated or unsaturated is by the use a gas chromatograph which is able to analyze fatty acids individually. Table 1 gives the fatty acid profiles of coconut oil and various animal fats.

**Table 1.** Approximate fatty acid profile and cholesterol content of coconut oil and various animal fats.

Component	Coconut oil <sup>1</sup>	Pork fat <sup>2</sup> (Lard)	Beef fat <sup>2</sup> (Tallow)	Butter <sup>2,3</sup>
Fatty acid, individual (%)				
C4, butyric				3
C6, caproic	0.4			2
C8, caprylic	7			
C10, capric	7			3
C12, lauric	49	0.1	0.1	4
C14:0, myristic	18	2	3	12
C16:0, palmitic	9	26	30	26
C18:0, stearic	3	18	25	11
C18:1, oleic	6	43	39	28
C18:2, linoleic	2	10	3	2
C18:3, linolenic	0.1	0.8	0.6	
Fatty acid, by group (%)				
Medium-chain saturated, C6-C12	63	0.1	0.1	9
Long-chain saturated, C14:0-C18:0	30	46	58	49
Unsaturated	8	54	42	30
Cholesterol (ppm)	<3	950	1090	2150

Refs. 1. Codex Alimentarius; 2. USDA Nutrient Data; 3. Butter contains about 3.3% trans-fat, mainly as vaccenic acid and elaidic acid, and other fatty acids that are not listed here.

The following conclusions can be made from Table 1:

1. Coconut oil and animal fats have very different fatty acid profiles. Further, coconut oil has negligible amounts of cholesterol, while animal fats have considerable amounts of cholesterol. Thus, it is erroneous to say that coconut oil is similar to animal fat.

2. Coconut oil is a saturated fat, but it is 63% medium-chain (C6 to C12). Medium-chain fats are metabolized differently from long-chain fats and, in fact, have a number of beneficial properties.
3. Animal fats have considerable amounts of unsaturated fat (>30%) and should not be considered as saturated fats. This is an error that has been blindly accepted by generations of scientists since it was proclaimed by Ancel Keys. An extensive correction of the claims of nutritional science on “saturated fat” is in order. Just because a fat is a solid at a certain room temperature does not mean that it is a saturated fat.

### **False claim # 3. Coconut oil causes heart disease.**

There is no study that has direct evidence that coconut oil causes heart disease. In fact, there is much direct observational and experimental evidence that coconut oil *does not cause* heart disease:

- Studies on traditional coconut-consuming societies. Tokelau and Pukapuka are remote islands in the Pacific and coconut is a major source of dietary energy, as is the case in *all* Pacific islands. In 1981, Prior and co-workers reported that Tokelauans and Pukapukans consumed 63% and 34%, respectively, of their diet from coconut. However, despite this high coconut intake, vascular disease was uncommon in both populations [4]. Prior could see the onslaught of the Western diet on the Pacific islands and realized that it was important to document the health status of traditional coconut-consuming societies.

In 1993, Lindeberg and co-workers observed that the inhabitants of Kitava Island, who consumed coconut as part of their staple, did not suffer stroke and ischaemic heart disease [5].

- Studies on coconut-consuming societies that switch to the Western diet. Numerous studies have documented the decline in health status of populations that abandon their traditional coconut diet and switch to a Western diet. Prior and co-workers contrasted the higher morbidity and mortality of the Maoris who migrated to New Zealand versus those who stayed at home [6]. Similarly, Stanhope and co-workers reported that in Tokelau, the islanders consumed 53% of energy from fat, 80% of which was from coconut, while migrants to New Zealand consumed less saturated fat and increased their sugar and carbohydrate consumption. Migrant males had higher mean concentrations of serum LDL and triglycerides and lower serum HDL than non-migrant males [7]. Galanis and co-workers reported that American Samoans who shifted to a Western diet showed greater obesity and higher risk for CVD as compared with Western Samoans who retained their traditional island diet. American Samoans consumed more energy

as carbohydrate and significantly less as fat and saturated fat [8]. In its report entitled *Diet Food Supply and Obesity in the Pacific*, the World Health Organization noted that Pacific islanders were “2.2 times more likely to be obese and 2.4 times more likely to be diabetic if they ate imported fats than if they ate traditional fat sources.” The imported fats included vegetable oils and margarine while the traditional fats included coconut oil [9].

- In a recent review of coconut oil consumption and cardiovascular risk factors, Eyres and co-workers reluctantly conceded that: “Observational evidence suggests that consumption of coconut flesh or squeezed coconut in the context of traditional dietary patterns does not lead to adverse cardiovascular outcomes,” but added that: “However, due to large differences in dietary and lifestyle patterns, these findings cannot be applied to a typical Western diet.” [10] The reasons were not explained in the paper.
- Coconut oil accounts for less than 5% of the total vegetable oil consumption in the US [11] and much of this is processed into *hydrogenated* coconut oil. Many of the studies that link coconut oil with heart disease were done in the US where *hydrogenated* coconut oil is the food item that is consumed, not coconut oil [12]. Hydrogenated coconut oil can be found in artificial coffee creamers, cake mixes and bakery products. Thus, coconut oil cannot be logically linked to heart disease in the US, so detractors use statistical tools.

**False claim # 4. There is no study that shows significant health benefits of coconut oil consumption.**

The truth is quite the opposite. Following is a short summary of the numerous scientific studies which show that coconut oil has many beneficial properties:

- Coconut oil is antibacterial: Numerous reports have been published on the antimicrobial properties of lauric acid, the major fatty acid in coconut oil, and monolaurin, its natural derivative. These are effective against *Staphylococcus aureus* [13] and *Helicobacter pylori*, the causative agent of stomach ulcers [14], among others. Virgin coconut oil (VCO) has been found to be very effective against skin *S. aureus* infection, especially in the proactive treatment of atopic dermatitis [15]. Coconut oil has been endorsed by the World Dental Association as an antibiotic that can combat tooth decay [16]. The antibacterial activity of coconut oil takes on special significance today when the number of antibiotic resistant bacteria is rapidly increasing with no affordable antibiotics in sight.
- Coconut oil improves the lipid profile: A recent study was done involving 94 European Caucasian volunteers who were randomized to one of three interventions: VCO, extra-virgin olive oil, or unsalted butter, at 50 g daily for 4

weeks. Coconut oil and olive oil gave similar LDL cholesterol profiles which were much lower compared with butter. In addition, coconut oil significantly increased HDL cholesterol compared with butter and olive oil [17].

- Coconut oil has anti-inflammatory properties: VCO supplementation has anti-inflammatory effects in the kidney which has been attributed to its antioxidant activity [18].
- Coconut oil has anti-cancer properties: In an *in vitro* study, lauric acid, the major fatty acid in coconut oil, was shown to activate apoptosis (or cell death) in cancer cells, which indicates that coconut oil has potential as a therapeutic agent [19]. The phenolic fraction of VCO is an antioxidant and cytotoxic agent against hepatocellular carcinoma (HepG2) cells [20].

### **The *Dietary Guidelines for Americans* and the worsening problem of obesity**

In its so-called “Presidential Advisory”, the American Heart Association decried the fact that: “A recent survey reported that 72% of the American public rated coconut oil as a “healthy food” compared with 37% of nutritionists. This disconnect between lay and expert opinion can be attributed to the marketing of coconut oil in the popular press.” [21] However, it is more likely that the American public have finally realized that the AHA and the *Dietary Guidelines* have been making them obese. As Cohen and co-workers correctly observed: “Americans have been following dietary guidelines, coincident with the rise in obesity” [22]. This can be clearly seen when one compares the dietary advice with the rise in overweight and obesity in the US (Table 2).

**Table 2.** Anti-saturated fat advice of the *Dietary Guidelines* and the rise of the prevalence of overweight and obesity in adults in the US [23].

<b>Dietary Advice</b>	<b>Overweight</b>	<b>Obesity</b>	<b>Extreme obesity</b>
1980: Avoid too much fat, saturated fat, and cholesterol	32.1	15.0	1.4
1985: Avoid too much fat, saturated fat, and cholesterol	No survey conducted		
1990: Choose a diet low in fat, saturated fat, and cholesterol	Data combined with next period		
1995: Choose a diet low in fat, saturated fat, and cholesterol	32.6	23.2	3.0
2000: Limit foods high in saturated fat and cholesterol	33.6	30.9	5.0
2005: Limit the intake of saturated, trans fats, cholesterol	32.2	35.1	6.2
2010: Consume less than 10% of calories from saturated fatty acids by replacing them with monounsaturated and polyunsaturated fatty acids.	32.7	36.1	6.6
2015: Limit calories from added sugars and saturated fats.	31.9	38.2	8.1

The advice of the *Dietary Guidelines* has made the Americans obese by demonizing saturated fat, including coconut oil. Unfortunately, this obesity-causing diet has been adopted by many other countries with the same consequences. As shown by the experience of the Pacific islanders, the Western diet that makes people obese and it is the traditional coconut diet that is healthy. Coconut oil may hold part of the solution to the rising obesity in the US, as well as the rest of the world.

### **The Responsible Use of Science and the Tree of Life**

“If you tell a lie big enough and keep repeating it, people will eventually come to believe it.” The sensationalist attack by Dr. Michels is clearly such a lie that is just being repeated. There have been many attacks on coconut oil which, upon analysis, have been shown to be based on deliberate misinformation and false assumptions. This is a highly irresponsible use of science and a grave disservice to the people.

The coconut has a tradition dating back several thousands of years and is unique in being revered by many so cultures as the “Tree of Life.” The truth is that the coconut and

coconut oil are among the healthiest gifts that nature has given us. We should use science and technology to ensure the development of these gifts for the benefit of the people and the coconut farmer.

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