

http://www.africanpacific.com/history/nui_health_benefits_coconut_oil.htm

The Tree of Life: The Wonderful Health Benefits of Virgin Coconut Oil

Traditional communities in tropical regions have for centuries used virgin coconut oil as a vital source for food, health and general well being. New research is verifying these traditional beliefs that the coconut palm is “The Tree of Life” and that organic virgin coconut oil has the potential to cure many of the ailments that have manifested in our bodies through the highly refined diet of our modern society. This site is dedicated to bring to you the wonderful health benefits and uses of organic virgin coconut oil. Nui Virgin Certified Organic Coconut oil is sourced from the tropical un-polluted islands of the South Pacific. The oil is processed on certified organic plantations using innovative technology to produce a high quality unrefined virgin coconut oil. Coconut oil is saturated fat, which has been organically processed and does not contain any trans-fatty acid or fats produced by modern refining and processing methods.

Saturated Fats: A Vital Ingredient for a Healthy Body

Coconut oil is unique in its structural make-up as it is not only the highest source of saturated fats (92%) but included in this is the highest source of saturated Medium Chain Triglycerides (62%) of any naturally occurring vegan food source. Furthermore over 50% of these MCT's are made up of Lauric Acid, the most important essential fatty acids in building and maintaining the body's immune system. The only other source of Lauric Acid in such concentrations in Mother's Milk

Boosting your Body's Immune System

Saturated fats are used in the body as an important source of energy and an integral part of the cell membrane structure. Short to Medium chain fatty acids are more water soluble than longer chain fatty acids and thus require less energy for the body to absorb and utilize. They are freely absorbed into the bloodstream and are thus an important source energy, raising the metabolism of the body. Furthermore, this reduced metabolic load allows the liver to optimise its detoxifying main functions of detoxification, bile production and regulating blood sugar levels.

Short and Medium Chain Fatty Acids contained in organic virgin coconut oil such as Caprylic (C8), Capric (C10) and Lauric (C12) have been found to have strong anti-viral, anti-bacterial and anti-protozoal properties and are essential building blocks in boosting the bodies immune system. These essential fatty acids have been shown to be active in combating Candida Albicans. Furthermore, the digested form of Lauric Acid, Monolaurin, has been shown to be active against

lipid-coated viruses and has shown to be a successful resource for the reduction of the viral in HIV patients.

The consumption of saturated fats has shown to assist in regulating the healthy functioning of the Thyroid gland and combating hypothyroid-like symptoms such as fatigue, weight gain, water-retention that may arise through a modern diet high in polyunsaturated fats.

Shorter chain fatty acids have a lower caloric value per gram of fat and may thus assist in weight loss due to the lower consumption of calories when taking in the daily recommended intake of fats from the healthy functioning of the body. The consumption of shorter chain fatty acids also assist in weight loss for their ability to help people feel satiated.

Ideal For Cooking and Baking

Given the high concentration of saturated fats, coconut oil is highly heat resistant and will only oxidise at temperatures of 177 degrees Celsius and is ideal for cooking, baking and frying. It can be easily blended with other oils (Olive oil or butter) or can be enjoyed cold in salads, smoothies or on its own. A suggested daily intake of three tablespoons is recommended

Nutritional and Dietary Information on Virgin Coconut Oil		
	Per 100g	Per 15g
Energy in kJ/kcal	3760/900	564/135
Eggwhite	0g	0g
Carbohydrates	0g	0g
Sugars	0g	0g
Fat	100g	15g
Saturated	92.1g	13.7g
Of which: Medium Chain Fatty Acids		

Capric C10	10g	1.5g
Lauric C12	48g	7.2g
Myristic C14	17g	2.6g
Long Chain Fatty Acids		
Palmitic C16	9g	1.4g
Stearic C18	2.0g	0.3g
Unsaturated	6.2g	1g
Polyunsaturated	2.1g	0.3g
Sodium	0g	0g

For many years the vegetable oil industry and other related politically-biased agricultural groups have been telling us that saturated fats are unhealthy. In fact, it is a common belief that saturated fats are the ‘bad’ fats. Although blanket statements like the previous one are misleading, it now appears that it may be more correct, although still misleading, to say that saturated fats are the ‘good’ fats and unsaturated fats are the ‘bad’ fats.

People need to realize that it is the amount and/or the type of saturated or unsaturated fat that can potentially be detrimental. All fats have something beneficial to offer the body, except for non-naturally occurring fats, like the trans-fatty acids. It would therefore be more correct to say that the only ‘bad’ fat is trans-fat or processed fat. Little focus has been given to the benefits from the different types of saturated fats: short, medium, and long chain fatty acids. Contrary to conventional belief, saturated fats are in fact beneficial in many ways.

Chemistry of Fatty Acids

Saturated fats are chains of single bonded carbon atoms which are ‘saturated’ with hydrogen atoms. Saturated fats are typically burned for fuel; incorporated into cellular membranes, such as the membranes of organelles, and can be changed into unsaturated fatty acids by the introduction of a double bond. Short chain

twentyfour (C14-C24) carbon atoms comprising their backbone.

Unsaturated fats are chains of carbon atoms with one or more double bonds. Monounsaturated fatty acids have only one double bond; whereas, polyunsaturated fatty acids have two or more double bonds. Examples of polyunsaturated fatty acids include the w-6 and w-3 essential fatty acids.

In general, unsaturated fats are used by the body for building cellular membranes, to attract oxygen to tissues, to transform energy into nerve impulses, and as precursors to molecules of cellular communication, such as prostaglandins or eicosanoids.

Chain length determines the inherent characteristics of a particular fat. For example, short and medium chain fatty acids tend to stay in their aqueous form at body temperature (37 °C), are more water-soluble than their longer chain counterparts, and tend to be used directly for energy production. As the chain lengthens, the melting point increases and the chain becomes less water-soluble, developing the tendency to aggregate or stick together with other fatty acids.

Aggregation protects these longer chain fatty acids, especially the unsaturated fatty acids, from oxidation. Shorter chained saturated fatty acids are easier for the body to absorb and utilize. Due to their shorter chain length, short and medium chain fatty acids are freely absorbed into the bloodstream from the gut. Hence, they do not require packaging into chylomicrons which is necessary for the non-polar longer chained fatty acids. Storage triglycerides and structural phospholipids are both composed of fatty acid chains.

Triglycerides are the storage form for excess fatty acids in the body and are produced in adipocytes through the process of fatty acid synthesis. A triglyceride is composed of a glycerol backbone with three attached fatty acids. A saturated fatty acid, usually of the short chain variety, is found in the first, outside position. In the middle, there are reserves of the essential fatty acids, linoleic and linolenic.

On the other outside position, a second saturated fatty acid is found, which can be of any number of carbons. Phospholipids also contain a glycerol backbone and are important in the maintenance of cell membrane fluidity and selectivity, as well for cellular communication. A saturated or an unsaturated fatty acid of sixteen (C16) or eighteen (C18) carbons is often found in one of the outside positions. An essential fatty acid is often bound in the middle position, and a phosphate molecule lies in the other outside positions with its attached R-group, usually a choline, inositol, ethanolamine or serine. The phosphate molecule is what gives a lipid bilayer of a plasma membrane its orientation. Hydrophilic (polar) phosphate groups orient themselves towards an aqueous environment, pushing hydrophobic (non-polar) fatty acid chains towards the center of the bilayer.

Plasma membrane bilayers also contain cholesterol and proteins, which are also important in the proper functioning of a cell and its protective membranes. Degradation of triglycerides and phospholipids provides energy and substrates for cell communication pathways. Unsaturated fats have double bonds, which introduce a kink into the carbon backbone of a fatty acid chain. This kink or bend is one of the reasons why unsaturated fatty acids cannot pack themselves closely together and hence, they take up more space. In the case of phospholipids, this helps to make the plasma membranes of cells and associated organelles

more fluid.

A second characteristic of unsaturated fatty acids is that they tend to attract oxygen to the surface of a cell . By doing so, this protects the cell from invasion by viruses and bacteria that are sensitive to an oxygen saturated environment. By being closely packed with saturated fats, the unsaturated fats are protected from oxidation. In contrast, saturated fatty acids are compound sources of energy and are very important in providing rigidity to cellular membranes, It has been shown that saturated fat is necessary for the stability of mitochondrial membranes.*1

Current Research

It is still believed that eating fat, of any kind, makes you gain weight. Research has now shown that it is the type of fat you eat that can potentially cause weight gain. There are studies suggesting that a diet high in polyunsaturated fats has adverse effects upon the thyroid gland, 2,3 causing hypothyroid-like symptoms, such as: fatigue, weight gain, edema, and hypercholesterolemia. When farmers in the 1940s fed pigs a diet high in soybean and sunflower oil, as opposed to coconut oil, the pigs gained a substantial amount of weight; whereas, pigs fed a diet high in coconut oil stayed lean.3

The Standard American Diet (SAD) increases one's risk for cardiovascular disease, diabetes, hypothyroidism, and especially, weight gain and obesity. A slowed metabolism results from the fact that SAD is high in unsaturated fats and refined carbohydrates. On the other hand, tissue response to thyroid hormone (T3) is actually enhanced by saturated fatty acids, specifically short chain fatty acids.*4 Theoretically, caution may be warranted in cases of hyperthyroidism against the use of short chain saturated fatty acids. On the other hand, increased tissue sensitivity to T3 may actually help to optimize one's body weight. *5,*6 The length of the fatty acid chain determines the caloric value per gram of fat. Shorter chain fatty acids have fewer calories per gram than longer chain fatty acids. Hence, it is incorrect to say that all fats have 9kcal/g.

The shorter chain fatty acids can also assist with weight loss because of their lower caloric value and most importantly, for their ability to help people feel satiated. It has been suggested that people on low fat diets, as opposed to diets balanced in fat and protein, actually end up consuming more calories at the end of the day, making it more difficult for them to lose weight. In studies comparing different types of fats it was found that shorter chain saturated fats decreased fat synthesis and storage capacity. *7-*10

Hence, dietary supplementation with coconut (*Cocos nucifera*) or butter which are high in short and medium chain saturated fat can be of great benefit in those wishing to lose weight. Studies have shown that atheromas, the precursor to atherosclerotic plaques, are composed primarily of polyunsaturated fats. Upon analysis of the fatty acid composition of arterial plaques, it was found that the level of saturated fatty acids in cholesterol esters was only 26% compared to 74% unsaturated fatty acids. Of the 74% unsaturated fatty acids, 38% was polyunsaturated and 36% was found to be monounsaturated fat.*11,*12

To date, evidence is lacking in support of the belief that short and medium chain saturated fats cause coronary heart disease, unless the oils have been previously processed by hydrogenation. When animals were fed hydrogenated coconut oil, it increased cardiovascular disease.*13

Currently the Atkins Diet, which is particularly high in saturated fat and low in carbohydrates, appears to be getting more and more positive press. In a six month study by researchers from Duke University, the Atkins Diet was compared to a low-fat, high-carbohydrate diet. Results of this study showed that the Atkins diet was more effective at improving serum levels of HDL and triglycerides. In this study, the Atkins Diet increased HDL levels by 11% compared to a 1% improvement for people on the low-fat, high carbohydrate diet. Furthermore, triglycerides decreased 49% on the Atkins Diet. There was no significant change in the LDL marker between the two groups.*14

Evidence is mounting that a low fat diet and/or a diet high in only polyunsaturated fatty acids may be detrimental to one's health. There are numerous articles with many different studies cited on the benefits of saturated fats which are heart protective. *6,*11,*13,*15,*16

In a study comparing many types of fats, palm kernel oil appeared to be the most protective against the development of cardiovascular disease. Furthermore, platelet aggregation was reduced by palm kernel oil and increased by sunflower oil, which is high in the polyunsaturated w-6 fatty acids.*17

In another study, cardiac necrosis caused by unsaturated fats were prevented by the addition of cocoa butter to the subject's diet.*18 Cocoa butter is composed of 35% stearic acid (C18) and 25% palmitic acid (C16), which are both saturated fatty acids. It also appears that cocoa butter has a neutral effect on cholesterol, *19,*20 which is thought to be due to the high content of stearic acid.21

Shorter-chained saturated fats have been used by physicians as conjunctive treatment in liver disease. Short and medium chain fatty acids, are directly absorbed into the bloodstream and utilized by the liver. Their short chain length allows these fats to be directly converted into energy. This reduced metabolic load allows the liver to optimize its function of detoxifying, producing bile, and maintaining optimal blood sugar levels. Studies have shown that the short and medium chain saturated fatty acids found in coconut oil provide protection against carcinogenic compounds.*15

In a study comparing the benefits of fatty acids in protecting against ethanol-induced liver damage, one group of animals was fed ethanol and tallow (saturated fat from animals) and a second group was fed ethanol and the unsaturated fatty acid linoleic acid. Results concluded that the animals fed tallow were protected from ethanol induced liver damage, whereas, animals fed linoleic acid developed fatty liver necrosis and inflammation. *15

Fatty acids are particularly important in the developing neonate. Pamitate is a long chain saturated fatty acid that is present in large amounts in phospholipids of lung surfactant. One study suggests that a maternal diet high in unsaturated fatty acids can potentially cause breathing problems for the newborn. In another study, pregnant mice were fed saturated fats. Upon comparison, the pregnant mice fed saturated fat in the form of coconut oil, as opposed to another group of

mice fed unsaturated fats were found to produce offspring with normal brains and higher intelligence.¹⁵

Furthermore, it is interesting to note that the composition of fats in coconut oil is similar to the fats found in human mother's milk.^{*22}

Unsaturated fats have been shown to be immunosuppressive.¹⁶ In the past, to prevent the deleterious effects of cachexia, cancer patients were given IV unsaturated fat in efforts to increase their caloric intake. In actuality, these unsaturated fats made their condition worse, by causing immunosuppression and increasing the risk for metastasis.^{*15}

Cancer cells have been found to preferentially use unsaturated fats for fuel, because of their inhibiting effect on proteolytic enzymes that would otherwise degrade the cancer cell's protective connective tissue capsule.^{*15}

The protective connective tissue capsule is one of the reasons that cancer cells are able to escape recognition by the body's immune system. Coconut and butter stimulate the differentiation of cancer cells, allowing recognition by the immune system and the potential reduction in metastasis. ^{*15}

In other words, unsaturated fatty acids appear to promote tumor growth, whereas saturated fats do not. Short and medium chain saturated fatty acids have proven beneficial for those suffering from cachexia of cancer, since they are a quick, high calorie energy source that doesn't promote cancer growth. Saturated fats in coconut oil, such as capric acid (C10) and lauric acid (C12), have been found to actually boost the immune system. In fact, coconut oil has been shown to be antiviral, antibacterial, antifungal, and antiprotozoal. ^{*11}

Lauric acid and its monoglyceride, monolaurin, have been shown to reduce viral load in HIV patients.²³ Monolaurin has also shown antiviral activity against most lipid-coated viruses. Both capric and lauric acids in coconut oil have been shown to be active against *Candida albicans*.^{*24} Saturated fats also have an important role in maintaining optimal kidney function. The kidneys have been found to preferentially use saturated fats for protective cushioning and as a quick energy source. Commonly occurring saturated fats in the kidney storage depots include: myristic (C14), palmitic (C16), and stearic (C18) acids. Kidney function can be enhanced by the high content of myristic acid found in coconut oil. ^{*25} Myristolation is a process where myristic acid is added to the end of a signaling protein, such as a G protein. ^{*26}

The addition of myristic acid allows for signaling across the kidney cell membrane, hence the importance of saturated fats in cellular communication.

Therapeutic Applications

As practitioners of medicine, we strive to do the best we can for our patients. We do this by looking at each patient as an individual within the context of our

current understanding of health and wellness. This includes removing obstacles to cure, recommending therapeutic interventions that do not cause harm, stimulating the body's innate power to heal itself, and to promote prevention through education.

When the above medical principles are utilized and applied in the context of treatment with therapeutic oils, a practitioner of natural medicine would consider the many benefits of using saturated fats in the treatment of chronic degenerative disease. An initial approach could simply be through dietary supplementation with natural sources of these oils. Recommendations could include cooking with coconut oil instead of the polyunsaturated vegetable oils or indulging in macarons once in a while.

Furthermore, consider giving antioxidants, such as Vitamin E, when polyunsaturated essential fatty acids are therapeutically indicated. In general, saturated fatty acids are underutilized by medical practitioners. As described above, saturated fatty acids can be used to: boost the immune system, for weight management, as antimicrobials, to support the structure of gut mucosa, and as dietary adjuncts in cases of chronic degenerative disease, such as cardiovascular disease, liver disease and cancer.

As far as the integrity of the gut mucosa is concerned, the use of short and medium chain fatty acids can reduce mucosal irritation characteristic of ailments such as: IBS, ulcerative colitis, and dysbiosis, to name a few. In particular, short chain fatty acids are antihistaminic and may find use in the treatment of allergic-type conditions, such as asthma, urticaria, and food sensitivities. Studies have also shown that short chain saturated fatty acids can be used in the treatment of: dental caries, peptic ulcers, BPH, genital herpes, and hepatitis.*22

Coconut oil has been traditionally used, among other things, as: a skin moisturizer, sunscreen, for the treatment of head lice, for ulcers, wounds, burns, dissolution of kidney stones, and in the treatment of cholera. In Ayurvedic medicine, the palm tree is known as the Tree of Life – from which both coconut and palm kernel oils are derived.*22

Many massage oils in use today are composed mainly of polyunsaturated fat, which may quickly oxidize when exposed to light and rubbed on the warm surface of the human body. Such commonly used massage oils include: almond, safflower, sunflower, and other vegetable oils. It appears that the use of saturated fats like coconut oil, would be advantageous, not only because of its stability and that it is readily absorbed into the skin, but also for its immune enhancing and antimicrobial effects. Coconut oil and other saturated fats can also be used as a carrier oil for essential oils, which have many therapeutic applications, such as antioxidants, antimicrobials, anodynes, and vulneraries. For example, the use of coconut oil with cinnamon (*Cinnamomum* spp.) and clove (*Syzygium aromaticum*) essential oils in the treatment of fungal infections, or the use of coconut oil with Lavender (*Lavandula angustifolia*) essential oil in cases of sunburn.

Conclusion

Healing effects from saturated fatty acids can be powerful if used appropriately. Naturopaths and other health care providers should not only be prescribing oils that are high in essential fatty acids, specifically the w-3 polyunsaturates, but also saturated fats found in food products like butter, coconut, palm kernel oil, and cocoa butter. Incorporating these foods into one's diet appears to invigorate the life force that permeates the human body. Correspondence: Teri Johnson (ND Candidate) John Keoni Teta (ND Candidate) keoniteta@msn.com

References:

- *1. Burst, P., et.al, Uncoupling of long chain fatty acids, *Biochem, Bioph. Acta.* 62, 509-18, 1962.
- *2. Benson, J. et. Al, Enhancement of mammary fibroadenoma in female rat by a high fat diet, *Cancer Res.* 16, 137, 1956.
- *3. Peat R. Ray Peats News Letter, Coconut Oil 1996.
- *4. Ortiz-Caro J, F. et, al, Modulation of thyroid hormone nuclear receptors by short chain fatty acid in glial C6 cells. Role of histone acetylation, *J. Biol Chem*, 1986 Oc. 25; 261 (30): 13997 –4004.
- *5. Shomon Mary. An Interview with Dr. Raymond Peat, a Renowned Nutritional Counselor Offers his Thoughts about Thyroid Disease, Mary Shomon, 1997-2002.
- *6. Fife, Bruce. *The Healing Miracles of Coconut Oil*, Healthwise, 2001.
- *7. Ingle, D.L. et. Al, Dietary energy value of medium-chain tryglycerides. *Jour. Of Food Sci.* 64(6):960. 1999.
- *8. Thampan, P.K., Facts and Fallacies About Coconut Oil. *Asian and Pacific Coconut Community.* P.1-2. 1994.
- *9. Bray, G.A., et. Al, Weight gain of rats fed medium-chain is less than rats fed long-chain triglycerides. *Int. J. Obes.* 4:27-32. 1980.
- *10. Geliebter, A. et al., Overfeeding with medium-chain triglycerides diets results in diminished deposition of fat. – *Am J. Clin Nutr.* 37: 1-4. 1983.
- *11. Enig, M.G. Coconut: In Support of Good Health in the 21st Century, 36th meeting of APCC, 1999.
- *12. Felton C.V., et al. Dietary polyunsaturated fatty acids and composition of human aortic plaques. *Lancet*, 344: 1195 –1196. 1994.
- *13. Enig M.G. Health and Nutritional Benefits from Coconut Oil: An Important Functional Food for the 21st Century, AVOC Lauric Oils Symposium, Ho Chi Min, Vietnam 25 April 1996.
- *14. Westman, E. (MD Duke Univ. obesity researcher). American heart Association's Scientific Sessions 2002, Chicago, Nov. 17-20.
- *15. Peat R. Ray Peats Newsletter, Oil in Context, 2001.
- *16. Martin, W. The Prudent Heart Diet and Cholesterol Lowering Drugs: Why They Don't Prevent Heart Disease, *Townsend Letter for Doctors and Patients* – Aug/Sept. 2002.
- *17. Rand, M.L. et al., Dietary palmitate and thrombus, *Lipids* 23 (11), 1988, and Hornstra, G. Arterial thrombus formaion in rats in *Biological Effects Fats*.

- *18. Meerson F.Z. et al. *Kardiologiya* 9, 85, 1982 and Kegan, V.E., Kagan et al., Calcium and lipid peroxidation in mitochondrial and microsomal membranes of the heart, *Full. Exp. Biol. And Med.* 95 (4), 46-48, 1983
- *19. Keys A, et al., Serum cholesterol response to changes in the diet. IV> Particular saturated fatty acids in the diet. –*Metabolism.* 1965; 14: 776-787
- *20. Hegsted, D.M., et al., Quantitative effects of dietary fat on serum cholesterol in man. *Am J Clin Nutr.* 7281 – 295, 1965.
- *21. Krichevsky D. Effectos of Triglyceride Structure on Lipid Metabolism. *Nutrition Reviews.* 1988; 46: 177-181.
- *22. Kabar, jj. (Professor Emeritus, Mich. State Univ. and Consult), *Health Oils from the Tree of Life (Nutritional and Health Aspects of Coconut Oil).*
- *23. Daycrit, CS. Coconut oil in helath and disease: Its and monolaurin’s potential as cure for HIV/AIDS. Read at the XXXVIII Cocotech meeting. Chennai, India
- *24. Bergusson, G. et al., in vitro killing of *Candida albicans* by Fatty Acids and Monoglycerides, *Antimicrob. Agents and Chemother.*, pp. 3209-3212, Vol. 45, No. 11 Nov. 2001.
- *25. Monserrat et al. *Res Exp med (Berl)* 2000; 199:195.
- *26. Busconi and Denker, *Biochem J*, 1997; 328:23. *Other Sources*
www.mercola.com
www.tropicaltraditions.com
www.coconut-info.com
www.lauric.org
<http://www.efn.org/%7Eraypeat/>
Erasmus, Udo. Fats & Oils: the Complete Guide to Fats & Oils in Health and Nutrition. Alive Books, Vancouver, BC, Canada. 1986.