

# Health Benefits of Coconut Oil

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Coconut oil is edible oil extracted from the kernel or meat of matured coconuts. It contains about 90% saturated fat. The oil is rich in medium chain fatty acids and exhibits some unique properties. Of late, the virgin coconut oil (VCO) is growing in popularity as functional food oil. Coconut oil is extensively used for food and industrial purpose. Throughout the tropical world, it has provided the primary source of fat in the diets of millions of people for generations. It has various applications in food, medicine, and industry. Coconut oil is very heat-stable, which makes it suited to methods of cooking at high temperatures like frying. Because of its stability, it is slow to oxidize and, thus, resistant to rancidity, lasting up to two years owing to the high saturated fat content. Based on the production methods, coconut oil is defined as traditional, refined and Virgin Coconut Oil (VCO).

## Traditional coconut oil:



Coconut oil is made from copra. Copra is basically the dried kernel (meat) of coconut. It can be made by: smoke drying, sun drying, or kiln drying, or derivatives or a combination of these three. Traditional coconut oil is the crude

coconut oil that has been obtained right from the expeller; unrefined, unfiltered and without any additives. Sometimes, it is also called Pure Coconut Oil to mark its differences with the Refined Bleached Deodorized Coconut Oil, commonly called the Refined Coconut Oil. The unrefined coconut oil extracted from copra is not suitable for consumption and must be purified. This is because the way most copra is dried is not sanitary.

## Refined Coconut Oil:

The standard end product for commercial purpose made from copra is RBD coconut oil. RBD stands for refined, bleached, and deodorized. The traditional coconut oil needs further processing for quality. High heat is used to deodorize the oil and the oil is typically filtered through (bleaching) clays to remove impurities. Sodium hydroxide is generally used to remove free fatty acids and prolong shelf life.

## Virgin Coconut Oil

Virgin Coconut Oil is prepared by using fresh coconut meat or what is called non-copra. Chemicals and high heating are not used in further refining. There are currently two main processes of manufacturing Virgin Coconut Oil:

1. Quick drying of fresh coconut meat which is then used to press out the oil. Using this method, the coconut meat is quick dried, and the oil is then pressed out via mechanical means.

2. Wet-milling. With this method the oil is extracted from fresh coconut meat without drying first. "Coconut milk" is expelled first by pressing. The oil is then further separated from the milk. Methods which can be used to separate the oil from the milk include boiling, fermentation, refrigeration, enzymes and mechanical centrifuge



## Composition, Physical and chemical Properties of Coconut Oil:

Coconut oil consists of more than ninety percent of saturated fats, with traces of few unsaturated fatty acids, such as monounsaturated fatty acids and polyunsaturated fatty acids. The oil contains predominantly medium chain triglycerides, with roughly 92% saturated fatty acids, 6% monounsaturated fatty acids and 2% polyunsaturated fatty acids. Of the saturated fatty acids, coconut oil is primarily 44.6% lauric acid, 16.8% myristic acid, 8.2% palmitic acid and 8% caprylic acid. Although it contains seven different saturated fatty acid in total, its only monounsaturated fatty acid is oleic

acid while its only polyunsaturated fatty acid is linoleic acid.

### Saturated fatty acids

Lauric acid is the chief contributor, with more than 40% of the share, followed by capric acid, caprylic acid, myristic acid and palmitic acid. Linoleic acid is the Polyunsaturated fatty acid and Oleic acid is the monounsaturated fatty acid. Coconut contains gallic acid, which is a phenolic acid. These polyphenols are supposed to be responsible for the fragrance and the taste of coconut oil and Virgin Coconut Oil is rich in these polyphenols. Certain derivatives of fatty acid like betaines, ethanolamide, ethoxylates, fatty esters, fatty polysorbates, monoglycerides and polyol esters, fatty chlorides, fatty alcohol sulphate and fatty alcohol ether sulphate, all of which are derivatives of fatty alcohols.

### Value addition through product diversification in coconut

Unrefined coconut oil melts at 24–25°C (76°F) and smokes at 177°C (350°F), while refined coconut oil has a higher smoke point of 232°C (450°F). Among the most stable of all oils, coconut oil is slow to oxidize and thus resistant to rancidity, lasting up to two years due to its high saturated fat content. In order to extend shelf life, it is best stored in solid form (i.e. below 24.5°C [76°F]).

### Health Benefits

The health benefits of coconut oil include hair care, skin care, stress relief, maintaining cholesterol levels, weight loss, increased immunity, proper digestion and metabolism, relief from kidney problems, heart diseases, high blood pressure, diabetes, dental care and bone strength. These benefits of oil can be attributed to the presence of lauric

acid, capric acid and caprylic acid, and its properties such as antimicrobial, antioxidant, antifungal, antibacterial and soothing properties. The human body converts lauric acid into monolaurin which is claimed to help in dealing with viruses and bacteria causing diseases such as herpes, influenza, cytomegalovirus and even HIV. It helps in fighting harmful bacteria such as *Listeria monocytogenes* and *Helicobacter pylori*, and harmful protozoa such as *Giardia lamblia*. As a result of these various health benefits of coconut oil, though its exact mechanism of action was unknown, it has been extensively used in Ayurveda, the traditional Indian medicinal system. The Coconut Research Center has compiled various benefits in both traditional and modern medicine.

### Healthy oil for the heart:

There is a misconception spread among many people that coconut oil is not good for the heart. This is because it contains a large quantity of saturated fats. Saturated fats are considered to be unhealthy and several health authorities recommend limiting their intake in the diet. These recommendations stem from studies linking higher intakes of saturated fat and heart disease. However, saturated fats are quite heterogeneous in nature and potentially also in their health effects. In fact, based on their structure, saturated fats can be sub-classified into short chain, medium

chain, and long chain fats whereas mono- and polyunsaturated fats are all long chain fats. Short chain fatty acids (SCFA) are considered to have six or fewer carbon atoms, medium chain fatty acids (MCFAs) have 8–12 carbons, and long chain fatty acids (LCFA) generally have 14 or more carbon chains. Most studies comparing the effects of saturated fats to unsaturated fats have focused on fats that contained a large proportion of their fatty acids as LCFA.

Both SCFAs and MCFAs are more polar than LCFAs and do not need to be packaged into chylomicrons for transport through the lymphatic system. Hence, coconut oil and other MCFAs do not enter the cholesterol cycle, and can be metabolized without carnitine, a rate-limiting step in their metabolism, which facilitates easy entrance into the mitochondria for betaoxidation. Value addition through product diversification in coconut natural, non hydrogenated coconut oil tends to increase HDL cholesterol and improve the cholesterol profile. HDL is the good cholesterol that helps protect against heart disease. Total blood cholesterol, which includes both HDL (good) and LDL (bad) cholesterol, is a very inaccurate indicator of heart disease risk. A much more accurate way to judge heart disease risk is to separate the two types of cholesterol. Therefore, the ratio of the bad to good cholesterol (LDL/HDL) is universally recognized as a far more accurate indicator of heart disease risk. Because of coconut oil's tendency to increase HDL, the cholesterol ratio improves and thus decreases risk of heart disease. People who traditionally consume large quantities of coconut oil as part of their ordinary diet have a very low incidence of heart disease and have normal blood cholesterol levels. This has been well supported by numerous population studies. The research shows that those



people who consume large quantities of coconut oil have remarkably good cardiovascular health. Reducing the consumption of coconut oil and replacing a portion of it with polyunsaturated fats resulted in changes to blood cholesterol levels that are associated with a reduced risk of cardiovascular diseases. Coconut oil has been shown to reduce the tendency of the blood to clot when compared to polyunsaturated fats.

### Weight Loss

Coconut oil is very useful in reducing weight. It contains short and medium-chain fatty acids that help in taking off excessive weight. It is also easy to digest and it helps in healthy functioning of the thyroid and enzymes systems. Further, it increases the body metabolism by removing stress on pancreases, thereby burning out more energy and helping obese and overweight people reduce their weight. Hence, people living in tropical coastal areas, who eat coconut oil daily as their primary cooking oil, are normally not fat, obese or overweight. Enhanced energy expenditure and fat oxidation were noted in both studies with ingestion of MCFA vs. LCFA, leading them to conclude that MCFAs may aid in the prevention of weight gain and obesity. St-Onge *et al.* (2008) carried out the research on MCFA and found that MCFA can be incorporated into a weight loss program without fear of adversely affecting metabolic risk factors. They also suggested that the distinction should be made regarding chain length when it comes to discussing the effects of saturated fats on metabolic risk

### Digestion

Internal use of coconut oil occurs primarily as cooking oil. Coconut oil helps in improving the digestive system and thus prevents various stomach and digestion related

problems. The saturated fats present in coconut oil have anti microbial properties and help in dealing with various bacteria, fungi, parasites, etc., that cause indigestion. One of the most outstanding benefits of consuming MCFAs is that they do not require the liver to digest and emulsify them. This means instant energy and increased thermogenesis (increased metabolic rate in the body) which leads to more heat production as well as improved circulation. Ulcerative colitis is a chronic disease that causes uncomfortable digestive symptoms and may limit the digestion of the foods we eat. Unlike most oils and fats, coconut oil is broken down in the stomach instead of the intestines. In other words, it is digested before it reaches the sensitive area for those with ulcerative colitis, the colon. Foundation for Alternative and Integrative Medicine (FAIM) recommends people with digestive disorders such as inflammatory bowel disease choose coconut oil over other animal oils to reduce their symptoms. However, eating for gut healing is a new area of research when it comes to these related digestive disorders. People with ulcerative colitis may also have difficulty absorbing all of the nutrients in their food. According to FAIM, coconut oil may improve the rate at which some vitamins and minerals are absorbed, though they report much of the evidence is based on its effects in the infant population.

### Healing and Infections:

Coconut oil is very effective against a variety of infections due to its antifungal, antiviral, and antibacterial properties. When applied on infections, it forms a chemical layer which protects the infected body part from external dust, air, fungi, bacteria and virus. Coconut oil is most effective on bruises as it speeds up the healing process by repairing damaged tissues. Coconut oil has

been found effective against certain strains of the Candida yeast, though it is ineffective against others. Coconut oil taken orally was found to be a useful adjunct therapy in children with community-acquired pneumonia. According to the Coconut Research Center, USA, coconut oil kills viruses that cause influenza, measles, hepatitis, herpes, etc. Taken in conjunction with IV ampicillin, coconut oil supplementation resulted in earlier normalization of respiratory rate and earlier normalization of lung sounds vs. IV ampicillin alone. Monolaurin from coconut oil has demonstrated virucidal activity against 14 human RNA and DNA enveloped viruses *in vitro*. Another laboratory study investigated the effect of monolaurin on primary and secondary skin infections compared with six common antibiotics. In culture isolates from the skin infections, monolaurin showed statistically significant broad-spectrum sensitivity to both Gram-positive and Gram-negative bacterial Value addition through product diversification in coconut isolates, such as *Staphylococcus aureus*, *Streptococcus* spp. and *Enterobacter* spp. Coconut oil is also effective on fungi and yeast that cause candidiasis, ringworm, athlete's foot, thrush, diaper rash, etc.

### Hair Care:

Coconut oil is one of the best natural nutrition for hair. It helps in healthy growth of hair providing them a shiny complexion. It is effective in reducing the protein loss for damaged and undamaged hair. It also provides the essential proteins required for nourishing damaged hair. Research study indicates that coconut oil provides better protection to hair from damage caused by hygral fatigue i.e. swelling and deswelling of hair. Since the process of swelling and deswelling of hair is one of the causes

of hair damage by hygral fatigue, coconut oil, which is a better penetrant than mineral oil, provide better protection from damage by hygral fatigue. Rele and Mohile (2003) found that coconut oil is the only oil found to reduce the protein loss remarkably for both undamaged and damaged hair when used as a pre-wash and postwash product. Coconut oil, being a triglyceride of lauric acid (principal fatty acid), has a high affinity for hair proteins and, because of its low molecular weight and straight linear chain, is able to penetrate inside the hair shaft compared to other oils like sunflower oil.

#### **Skin Care:**

Coconut oil is excellent massage oil for the skin as well. It acts as an effective moisturizer on all types of skins including dry skin. The benefit of coconut oil on the skin is comparable to that of mineral oil. Further, unlike mineral oil, there is no chance of having any adverse side effects on the skin with the application of coconut oil. Coconut oil therefore is a safe solution for preventing dryness and flaking of skin. Xerosis is a common skin condition characterized by dry, rough, scaly, and itchy skin, associated with a defect in skin barrier function, and treated with moisturizers. People in the tropics have effectively used coconut oil as a traditional moisturizer for centuries. Recently, the coconut oil also has been shown to have skin antiseptic effects. Coconut oil showed effectivity through significant improvement in skin hydration and increase in skin surface lipid levels. It also delays wrinkles and sagging of skin which normally become prominent with age. Coconut oil also helps in treating various skin problems including psoriasis, dermatitis, eczema and other skin infections. Therefore coconut oil forms the basic

ingredient of various value addition through product diversification in coconut body care products such as soaps, lotions, creams, etc., used for skin care. Coconut oil also helps in preventing premature aging and degenerative diseases due to its antioxidant properties.

#### **Dental Care:**

Researchers from the Athlone Institute of Technology in Ireland found that coconut oil, when digested, can attack the bacteria responsible for tooth decay. They found that the coconut oil to be remarkably effective against the *Streptococcus* (and in particular *Streptococcus mutans*) bacterium, a leading contributor to tooth decay. These results give dentists hope that coconut oil treatments in the future could lead to widespread prevention of tooth decay in the general population. Additionally, coconut oil was shown to be effective against *Candida albicans*, the yeast that notoriously causes thrush, another common oral health concern. Calcium is an important element present in teeth. Since coconut oil facilitates absorption of calcium by the body, it helps in getting strong teeth.

#### **Virgin Coconut Oil (VCO):**

Fatty acid composition of VCO is similar to that of traditional and refined coconut oil, but it is rich in antioxidants such as poly phenolic compounds, tocopherols and phytosterols. Major polyphenolic compounds identified in VCO were protocatechuic, vanillic, caffeic, syringic, ferulic and p-coumaric acids. Numerous studies suggest that the consumption of foods containing dietary phenolics may significantly contribute to human health. Beneficial effects resulting from phenolic antioxidants has created a niche in finding of food worth of these phenolic compounds. VCO contained

higher total phenolic content compared to refined coconut oil.

It was suggested that the RBD (refined, bleached, and deodorized) process being applied through dry method had considerably destroyed some of the phenolic compound in coconut oil. The total phenolic content of traditional coconut oil was nearly seven times higher than that of commercial coconut oil. The antioxidant activity in VCO was reported to be high in VCO compared to refined coconut oil. The VCO obtained was subjected to three different antioxidant assays, namely 1,1-diphenyl-2-picrylhydrazyl (DPPH) radical scavenging activity,  $\beta$ -carotene-linoleate bleaching activity and reducing power. A significant difference was observed in the total phenolic content, with fermentation method yielded the highest value addition through product diversification in coconut total phenolic content, followed by chilling and RBD methods. The VCO produced through fermentation had the strongest scavenging effect on DPPH and the highest antioxidant activity based on  $\beta$ -carotene-linoleate bleaching method. However, VCO obtained through chilling method had the highest reducing power. Very high correlations were found between total phenolic content and each of scavenging activity and reducing power.

Coconut oil contains unique fatty acids which are easy to digest, supply a source of quick energy, support thyroid function (which enhances healing and immune system function), and improve nutrient absorption. In addition, medical research indicates coconut protects against heart disease, breast and colon cancer, liver disease, kidney disease, Crohn's disease, epilepsy, candida, herpes, influenza, and even numerous infectious diseases.