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## Virgin coconut oil: A nutraceutical and therapeutic food

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### Abstract

Coconut oil constitutes the most important source of dietary fat in many countries. But, of late the consumption of coconut oil has been linked with incidence of coronary heart diseases and sustained campaign against its use is going on. Normal coconut oil contains 92% of saturated fatty acids, most of them are medium chain fatty acids (MCFA). The monoglyceride monolaurium is the substance that keeps infants from getting viral or bacterial or protozoal infections. Coconut oil lowers cholesterol through stimulation of thyroid function. Also coconut oil has high resistance to oxidative rancidity, sharp melting behavior, effective heat transfer agent in frying, provides moisture barrier and in frying, loss to bakery items in spray oil use, carrier and protective agent for fat soluble vitamins, maximum glycerin content, easily saponifiable even in cold, germicidal and antimicrobial property, ready penetration into the skin and appreciable water absorbing property.

**Keywords:** Virgin coconut oil, medium chain triglycerides, nutraceutical and cosmetics

### Introduction

Coconut palm, "The Tree of Life" or "Kalpavriksha" is known to confer multiple benefits like health, wealth and shelter to mankind. In India, the use of coconut for food and health is documented in Ayurvedic text book since time immemorial. The most popular edible commercial products derived from fresh coconut kernels are desiccated coconut, coconut milk/cream in liquid and powder form and coconut oil. One of the primary natural products produced from the "Tree of life" is coconut oil which has been used for thousands of years as food and cooking oil. Coconut oil is used for various purposes i.e. edible (39 %), toiletry (46.5) and other industrial (14.1%) uses. Coconut oil derived from mature copra has no adverse effects on health (Thampan, P.K. 1988) [5]. Fatty acids can be classified into short chain fatty acids, medium chain fatty acids and long chain fatty acids which depends on number of carbon atoms bonded between carbon and hydrogen (Gopalakrishnan *et al.* 2000). The highest cholesterol content in our daily diet was through egg (5000 ppm) whereas coconut oil had only 0-14 ppm. Rathinam *et al.* 2002 [4] reported that lauric acid the richest fatty acid in coconut oil was about 49.5 percent. The clinical studies at New England deacones hospital showed that coconut oil is neutral in its effect on blood lipids and will not cause an increase in cholesterol or cardio vascular diseases. The lauric acid in coconut oil is converted into monolaurium in the human body and it kills viruses, many bacterial and protozoa. Coconut oil is a rich source of medium-chain-triglycerides (MCT). The improved cholesterol readings lower body fat deposition, higher survival rates, reduced tendency to clot blood, fewer uncontrolled free radicals incells, low levels of blood and liver cholesterol, higher antioxidants reserves in cells and lower incidence of coronary heart diseases in population studies (Bruce fife, 2000) [1]. Thyroid hormone is directly correlated by converting LDL cholesterol into anti-aging steroids, precyneolous and progesterone which are prerequisites for heart disease, obesity and cancer (Lim Sylianco, 1987) [3]. Sixty three percent of coconut oil is composed of antimicrobial medium-chain fatty acids and therefore can assist the immune system in fighting against microscopic invades. Coconut oil is rich in free fatty acids viz., lauric acid, capric acid, caprylic acid and caporic acid which makes up trglyceride molecule and forms antimicrobial properties of coconut oil. MCT's found in coconut oil have been shown in laboratory experiments to be effective in destroying viruses, bacteria, yeasts and parasites.

The recent high value coconut product, which is becoming popular globally, is Virgin Coconut Oil (VCO).

Virgin Coconut Oil is obtained from fresh, mature endosperm (Kernel-meat) of the coconut by mechanical or natural means, with or without use of heat, no chemical refining, bleaching or deodorizing and maintains the natural aroma and nutrients. It is called, "Virgin" because the oil obtained is pure, raw and pristine. Virgin coconut oil is suitable for human consumption in the natural form. It is the purest form of coconut oil, crystal clear, contains natural vitamin E and with very low free fatty acid content (0.1 %). It has a fresh coconut aroma ranging from mild to intense depending on extraction process.

### Health benefits of VCO

- Virgin coconut oil is considered as nutraceutical food, because
- The medium chain (C8-C12) fats in coconut oil are similar in structure to the fats in mother's milk that gives babies immunity to many diseases.
- VCO possess anti-inflammatory, anti-microbial and antioxidant properties, which will work together to protect arteries from arteriosclerosis and the human heart from cardio vascular disease.
- VCO boosts the immune system.
- VCO protects against heart disease by increasing high-density lipoprotein (HDL) that collects the excess or unused cholesterol in the body for excretion by the liver.
- VCO provides protection from infectious diseases not easily cured by known antibiotics.
- VCO is digested easily and does not require pancreatic digestive enzymes and bile and goes directly to the liver for conversion into energy.
- VCO stimulates metabolism, boosts energy and prevents deposition of fats thereby preventing obesity.
- VCO improves the nutritional value of food by increasing absorption of vitamins, minerals and amino acids.
- VCO is main base in cosmetics products which provide skin health.

### Uses of Virgin Coconut Oil

Coconut oil has several industrial applications. But VCO is unique among all the other vegetable oils because of its high lauric acid content. It is reported that lauric acid in coconut oil is used by the body to make the same disease fighting fatty acid derivative monolaurin that infant babies make from the lauric acid they get from mother's milk. The monoglyceride (monolaurin) is the substance that keeps infants away from getting viral or bacterial or protozoal infections. The other common applications of VCO are given below. It is used as

- Hair and skin conditioner
- Oil base for various cosmetic and skin care products.
- Carrier oil for aroma therapy and massage oils.
- Nutraceutical and functional food.

### Processing Virgin Coconut Oil

Virgin coconut oil can be extracted directly from the fresh coconut meat or from coconut milk. The different processes involved in VCO production are hot processing method, natural fermentation method, centrifugation process and extraction from dried grading (EDG) method. The choice of the technology to be adopted depends to a great extent on the scale of operation, the degree of mechanization, the amount of investment available and the market demand. For decades, people in coconut producing countries like India and Philippines boiled coconut milk extracted from freshly grated or comminuted (grated, chopped, ranulated) coconut meat

with or without the addition of water, to produce coconut oil for hair and body massaging applications.

The modified hot process method for producing VCO also follows the same principle except for controlled heating to prevent the oil from turning yellow and maintain the moisture content less than 0.2 % to prolong its shelf life. Hot process comprises of two stages: extraction / preparation of coconut milk and cooking the milk to get VCO>.

In fermentation method, the VCO can be produced in a home-scale operation using ordinary kitchen utensils after extracting the coconut milk. The oil produced in this method is water – clear in colour. The VCO produced could turn sour if the fermentation period is prolonged and the fermentation process conditions are not controlled properly. Fermentation method comprises of two stages: extraction/preparation of coconut milk and fermentation of the milk for VCO production.

In centrifugation method, the coconut milk is subjected process. Coconut milk and hot water is fed in a three way centrifuge equipment where the oil separates out from the top and the water and sludge comes out through separate outlets. It produces the best quality oil with sweet coconut aroma and the oil produced in this method is water-clear in colour. Centrifuge method comprises two stages: extraction / preparation of coconut milk and centrifugation of the milk for VCO production.

Important steps involved in the production of virgin coconut oil are given in Figure 1 as process flow chart and each process involved in VCO production are discussed in detail.

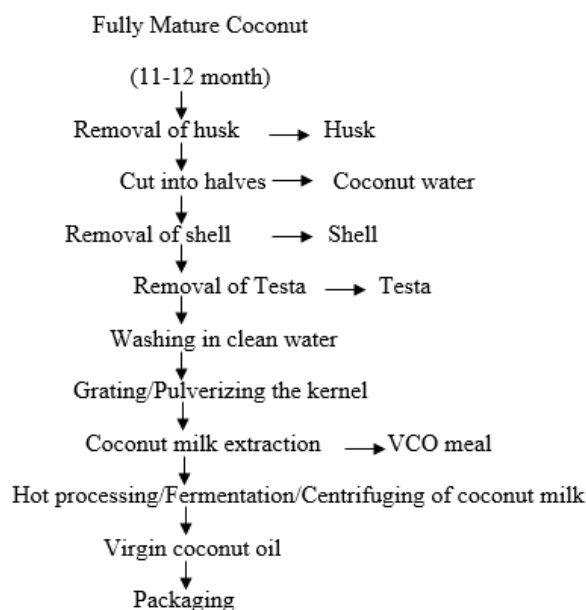


Fig 1: Process flow chart for the production of Virgin Coconut Oil

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