

## Virgin Coconut Oil gaining popularity as a functional food

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Virgin Coconut Oil (VCO) produced by using coconut meat and coconut milk is gaining popularity as a healthy and nutritive food. The VCO contains biologically active components reported to enhance the health and wellness. Hence it has got enough popularity as a functional food and the public awareness is also increasing. It has a wider use as nutraceutical and cosmoceutical product. Those who get a chance to taste this healthy oil realizes its effect in increasing the general well being. Several people have started to include VCO in their regular diet. There are reports from their experience that VCO helps to increase the general well being. Over the last ten years the export of VCO has experienced a fast growth among the value added products from coconut. Philippines is the major player in export market. In India also the demand for VCO for domestic consumption and export is increasing due

to the increased awareness and knowledge on the proven health benefits of this product. As per the data available with Coconut Development Board (2016-17) around 18,000 tonnes of VCO is produced in India. Out of which only 500 tonnes is exported and the remaining is consumed in the domestic market. It is expected that VCO will experience a dramatic growth in the market in future.

### How VCO differs from ordinary coconut oil?

Virgin Coconut Oil is rapidly gaining popularity throughout the world in comparison with ordinary coconut oil. It is in fact different from ordinary coconut oil mainly in its physical form of source, method of extraction and its subsequent benefits. The main difference lies in the process of its extraction. Words like virgin and extra virgin used with this product is



confusing the people. The word extra virgin is simply a marketing term, and it is not different from virgin coconut oil. One of the major differences between regular coconut oil and virgin coconut oil is the method of extraction. Regular coconut oil is made from copra, which is the dried coconut kernel. The copra is pressed and then the oil is extracted to make it suitable for consumption, whereas VCO is extracted from fresh coconut kernel by mechanical means, without the use of heat, without undergoing chemical refining.

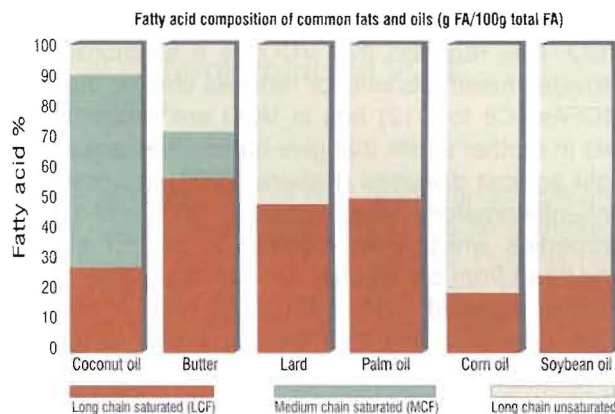
VCO differs from regular coconut oil in its appearance. It is as clear as water but regular coconut oil is yellowish. It has a very good taste and smell as it is derived from fresh coconut. This preserves all the natural goodness including high content of Vitamin E and nutrients which are otherwise lost from ordinary coconut oil during process of extraction.

Virgin coconut oil has a very good taste and smell since it is derived from fresh coconuts and is subjected to very low heat and sunlight. Furthermore, virgin coconut oil is very effective as a moisturizing agent. Its antioxidant properties are far better than those of normal coconut oil. The shelf life of virgin coconut oil is very long (one year) which is much longer than any other edible oil and it does not go rancid easily.

### Why VCO is called a functional food?

Functional foods are foods which contain an ingredient that gives health promoting properties over and above its usual nutritional value. Functional foods are food that claims to improve health or well-being by providing benefit beyond that of the traditional nutrients it contains. Nutraceutical product is a food that not only supplements the diet but also assists in treating or preventing disease so provides medicinal benefits. VCO is nowadays getting more popular among people as a functional food. VCO is considered as a functional food as well as a nutraceutical product because it provides nutrients good for health and reduce the risk of chronic diseases. VCO is the world's only natural low calorie (Bruce Fife, 2004) fat. It is reported that VCO is easily digested and has been used as a food and medicine. In Philippines it is sold through medical shop, i.e. the value chain for VCO started from the farmers to medical shops before it goes to consumers. Medical shops are also a participant of VCO value chain. VCO contains medium-chain fatty acids (MCFAs) that can improve health in many ways. One of the good choices of fat you can add to your diet is virgin coconut oil. VCO contains the highest percentage of medium chain

fatty acids (MCFAs) with carbon chain length of 8-12 carbon atoms. Medium chain standard fatty acids (MCFAs) get easily digested in the human body and release energy. Hence these fatty acids are good for health. These fatty acids are immediately converted into energy rather than being stored in human body as fat. A comparison of common fats and oils are shown below.



Source: VCO Production Manual (FAO, February 2006)

Overall virgin coconut oil is a highly nutritious and contains a superior disease fighting fatty acid called lauric acid. It is also rich in fiber, vitamins, and minerals. VCO is very effective as a moisturizing agent. Its antioxidant properties are better than normal coconut oil. Fatty acid composition of VCO is given below.

Fatty acid		Range
Caproic acid	C 6:0	ND - 1.0
Caprylic acid	C 8:0	- 10
Capric acid	C 10:0	5.0 - 10
Lauric acid	C 12:0	47.0 - 53.2
Myristic acid	C 14:0	13.0 - 21.9
Palmitic acid	C 16:0	7.5 - 11.0
Stearic acid	C 18:0	1.0 - 4.9
Oleic acid	C 18:1	5.0 - 10.0
Linoleic acid	C 18:2	1.0 - 2.5
Linolenic acid	C 18:3	ND - 0.2
Eicosanoic acid	C 20:0	ND - 0.2
Eicosanoic acid	C 20:1	ND - 0.2

ND - non detectable or  $\leq 0.05\%$

Source: CDB Institute of Technology

Out of the total fatty acids in VCO, more than 64% is MCFAs with lauric acids (C12) ranging from 47% to 53% which vary with coconut variety. Studies conducted at Philippines Coconut Authority (PCA) revealed that hybrid varieties have higher lauric fatty acid content (about 50%) than local tall varieties.

Studies on more health benefits of VCO are being revealed day by day. Several studies have been done and VCOs effectiveness and research to currently being done on the nutritional value of VCO. It is reported that VCO as a functional food provides health benefits or reduces chronic disease. MCFAs (C8 to C12) fats in VCO are similar to the fats in mother's milk that give babies the immunity to fight against diseases (Kabara, 2000). It possesses anti-inflammatory, anti microbial and anti-oxidant properties which work together to protect arteries and heart from cardio-vascular diseases. (Fife, 2004) VCO is digested easily without the need of bile and goes directly to the liver for conversion to energy. (Dayrit, 2003) Virgin Coconut Oil is loaded with Medium Chain Triglycerides (MCTs) which act as a neuro regenerative agent for Alzheimer's disease (Dr.Mary New Port). VCO also keep skin youthful, smooth & healthy looking. Using virgin coconut oil as a lotion will help improve your skin, hair, and nails due to its moisturizing and smoothing effects that also promote elasticity. It also protect our body from diseases. A study on "Health benefits of dietary intake of Virgin coconut oil on neural-immune network" was conducted by SRM University, Tamil Nadu with financial assistance from CDB. The major finding of this study provides the first proof of mechanism(s) of action(s) of physiological and molecular effects of VCO in brain and spleen. Study on "Effect of Virgin coconut oil as a dietary supplement on lipid profile and oxidative stress in dislipidemic individuals with Low High density lipoproteins [HDL]" by Amrita Institute of Medical Sciences and Research Centre, Kochi, Kerala. A Project on "Virgin Coconut Oil as a neuro regenerative agent for Alzheimer's disease – Computational analysis Pharmacogenomic study" by Amrita Viswa Vidyapeetham, Amritanagar, Coimbatore, Tamil Nadu with financial support from CDB are in progress.

## Economics of VCO Production

VCO is one of the high value products from coconut. Return per coconut can be increased many folds by establishing VCO processing units. For production of one litre of normal coconut oil requires 10 coconuts where as for production one kg VCO

requires 17 coconuts. The cost of ordinary coconut oil Rs.200/- to Rs.220/-per kg, where as the cost of VCO is Rs.1000/- per kg. Hence Income from coconut farm can be increased 3-4 times over traditional copra production, coconut oil or sale of fresh nuts. At present the average retail domestic price of coconut is @ Rs.20 per nut, 17 Coconut will generate an income of Rs.340/- However if 17 coconuts are processed into VCO, the income generated will be Rs.1000/- which is the current retail domestic price per kg for VCO traded in India. However for production of one litre of ordinary coconut from copra, 10 coconut is required and @ Rs.20/- per nuts with at cost of 10 coconut costs Rs.200/- The current retail market price of coconut oil is Rs.250/-. The margin or buying and selling price is very low in ordinary coconut oil compared to VCO. Under these conditions, processing of coconut to VCO instead of copra is a much profitable choice. Besides the export price of VCO is very high compared to ordinary coconut oil. The present international price of copra and coconut oil is less than the domestic price. This indicates that value addition is highest in VCO i.e. about 300% and it is one of the high valued products traded in the world market.

CDB under a sponsored research project of Central Food Technological Research Institute (CFTRI), Mysore in 2006 developed the technology for production of high quality VCO through wet processing called centrifugal method. VCO produced through this technology is on par with the quality standards of VCO at international level. The technology is available with CDB for transfer to interested entrepreneurs for starting commercial production units. Details of this process for extracting VCO and machineries required are available in the website of CDB. The health and nutritional attributes of virgin coconut oil (VCO) made it popular in domestic and global vegetable oil market. Considering the increasing demand of VCO in domestic and international market, more emphasis is given by CDB to increase its production and marketing. Venturing into more clinical studies to prove the goodness of VCO with international collaboration is another strategy adopted for its promotion. Export Promotion of VCO is also taken up by CDB. Separate ITC HS code for VCO is not yet allotted and at present it is exported from India with ITC HS code of other coconut products. This issue is being taken up by CDB with the Department of Foreign Trade, Ministry of Commerce Government of India. Coconut sector starting from the farmers, traders, processors and marketeers in the VCO value chain can expect to experience great prosperity. ■