

Coconut and its extracted oil are important part of the daily diet in the population in Kerala. Coconut oil has a unique role in the diet as an important physiologically functional food. The health and nutritional benefits that can be derived from consuming coconut oil have been recognized in many parts of the world for centuries. Coconut oil has proven, in both laboratory and clinical experiments, to be good for patients with malabsorption syndrome, disorders in digestion, obesity, post-surgical patients and premature infants in whom long chain

hydrogenated coconut oil as the only source of fat, nearly became essential fatty acid deficient. The hydrogenated coconut oil was selected instead of hydrogenated cotton seed oil, corn or soybean oil because it was soft for blending into diets due to the presence of the lower melting medium chain fatty acids. The same functionality could not be obtained from the cotton seed, corn or soybean oil if they were made totally

coconut oil feeding only showed that coconut oil was not effective at lowering serum cholesterol as was the more unsaturated fat being compared. This appears to be in part because coconut oil drive cholesterol into tissues as does the more poly unsaturated fatty acids. When we consider coronary heart disease, elevated blood cholesterol is an established risk factor.

## COVER STORY

### Cholesterol level

# Coconut oil brings in no evil

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fatty acids cannot be digested. It is used widely in Ayurvedic medicines to cure bites, burns etc. Daily use of coconut oil over the body prevents skin diseases, dryness of skin, hair fall, dandruff and promote growth of hair. Clinical studies have shown that coconut oil has anti-microbial and anti-viral properties.

### Misconception about coconut oil

Eventhough coconut oil has many beneficial uses, there are people who believe that consumption of coconut oil increases blood cholesterol and thus promote the risk for the occurrence of coronary heart disease (CHD). This myth is primarily due to the saturated fat content of the oil.

The problem for coconut oil started several decades ago when researchers fed animals with hydrogenated coconut oil. The animals which are fed by

saturated, since all their fatty acids were long chain and high melting and could not be easily blended nor were they are readily digestible. Diet that cause essential fatty acid deficiency, always produce an increase in serum cholesterol. Due to the specific composition of the saturated fatty acids, coconut oil consumption as part of the normal diet does not cause elevation of blood cholesterol.

Coconut and coconut oil have been consumed for many centuries by millions of people in Philippines, Indonesia, Sri lanka and the islands in the Pacific for whom it was their main source of fat. However the incidence of heart attacks among the villagers in these countries have been relatively low. Studies that showed a hypercholest-erolemic effect of

Dietary fat is only one of the factors that influence Coronary Heart disease. Several other factors are in our diet and lifestyle that influence cholesterol and heart disease. The intake of coconut or its oil as part of normal diet has no deleterious effect.

### Where does cholesterol come from?

The human body obtains part of its cholesterol from the animal fatty products. But the greatest part of the cholesterol is produced within the body itself mainly by the liver. Appreciable amounts of cholesterol is also formed in the small intestine. As much as 1gram a day being synthesized in these organs. Even if we take no dietary cholesterol, no dietary animal fat and only limited amounts of vegetable fat, as provided by a vegetarian diet, our body continues to synthesize cholesterol. An adult on a low cholesterol diet typically synthesizes about 800 mg cholesterol/day. The rate of cholesterol formation by these organs is highly responsive to the amount of

cholesterol absorbed from dietary sources.

### **Chemical features of coconut oil**

Since coconut oil consists of mostly saturated fatty acids, it is generally believed that consumption of coconut oil increases blood cholesterol and thus promote heart disease. Among the vegetable oils, coconut oil stands out for having one of the highest saturated fatty acid contents (90%). All the Saturated fatty acids are not as same. Saturated fatty acids in coconut oil are of short and medium chain length. Nearly 15% of the total fatty acids are composed of short chain fatty acids (caprylic- C8:0 and capric- C10: 0). About 48% of fatty acid is of medium chain fatty acid, lauric acid -C12:0. coconut oil supplies only 2 % linoleic acid, the only polyunsaturated fatty acid in coconut oil. Because coconut oil contains mostly short and medium chain saturated fats it is easily digested, absorbed and utilized by the body. They are transported to the liver via portal vein and preferentially used for energy production and appeared to be less fat deposition when compared to long chain fatty acids.

Before we consider the effect of coconut oil on blood cholesterol and heart disease it is very important to remember that dietary fat is only one of the factors that influence CHD. There are several other factors in your diet and life style that influence blood cholesterol and heart disease. The nature and quantity of carbohydrates, proteins, dietary fiber , deficiency of certain vitamins and minerals in your diet, physical activity , alcohol consumption, smoking, stress and strain in your daily life, genetics, all these factors and many others are known to influence blood cholesterol and CHD. Therefore in the human situation it is the interaction of all these factors which is important rather than the contribution of any one factor alone. Among the dietary factors, the proportion of saturated fats in the diet seems to be greater importance in producing an excess cholesterol in the body.

Sufficiently strong proofs now exists to disprove the allegation about coconut oil consumption and its relation to enhancing the risk for the occurrence of

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coronary heart disease. Kaunitz and Dayrit (1992) have reviewed some of the epidemiological and experimental data regarding coconut consuming groups and noted that the available population studies show that dietary coconut oil does not lead to high serum cholesterol nor to high coronary heart disease mortality or morbidity. Previously Blackburn et al (1988) have reviewed the published literature on the effect of coconut oil on serum cholesterol and atherogenesis and have concluded that when coconut oil is fed physiologically with other fats or adequately supplemented with linoleic acid, coconut oil is a neutral fat in terms of atherogenicity.

### **Studies in Kerala population**

The characteristic feature of Kerala diet is the use of coconut kernel and coconut oil in most culinary preparations. Thus coconut oil in the diet is partly from free oil and partly from coconut kernel. Studies carried out in humans in the

Department of Biochemistry, University of Kerala clearly disprove the allegation against coconut and coconut oil consumption. A total number of 258 volunteers (163 male and 95 female) were participated in this study. Average daily consumption of coconut kernel of these subjects was 55.8 g/head/day. The average free oil consumption was 15.4g/head/day. Thus the average coconut oil consumption (free oil + oil derived from kernel) was 38g/head/day. The results of the study



Coconut or its oil does not play a harmful role.

indicate that coconut oil consumption does not cause increase in blood cholesterol or LDL cholesterol, but increase HDL cholesterol. Consumption of coconut kernel along with coconut oil, as is the invariable practice in the Kerala population produced lower total cholesterol and LDL cholesterol and higher HDL cholesterol. Apart from coconut oil, coconut kernel contains 5% protein and 7% dietary fiber. Further studies indicate that the beneficial effect of the coconut kernel is mainly due to coconut fiber and coconut protein present in it. These observations clearly indicate that coconut and coconut oil consumption as part of a normal diet has no deleterious effect with respect to blood cholesterol.

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