

Clinical trials on coconut oil

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Coconut oil has been widely used as a health support in areas like immune system, cholesterol level maintenance, hair care, skin care, stress relief, weight loss, proper digestion and regulated metabolism, neuro degenerative disorders, cellular degradation etc. It has been reported that the quality of life (QOL) of patients diagnosed with breast cancer has been tremendously improved by using virgin coconut oil (VCO). Recent studies on rats suggest the possibility of using VCO for liver protection against liver damages and infections. Oncologists have started advising their cancer patients to apply VCO after chemotherapy to avoid loss of hair. It is very difficult to include all the clinical trials going on and completed with coconut oil. However few of them have been included in the review.

Coconut oil in cardiovascular disease:

Saturated fats especially coconut oil and its products have been the centre of blame for many years as a cause of increased cholesterol levels, which supposedly leads to heart disease. But studies made on traditional tropical populations that consume large amounts of coconut oil show just the opposite. Much research is going on in assessing the pharmacophoric properties of coconut oil, especially in regulating the cardiovascular functions. There are a number of clinical trials made by researchers in supporting their claim; most of them are reported in the 'Coconut Diet Forums' (<http://www.coconutdiet.com/forum.cfm?>).

The reported clinical trials,

completed and going on in the area of cardiovascular diseases have been listed below.

With the objective of evaluating the supplementation with extra virgin of coconut oil combined with a nutritional counseling in reducing anthropometry and improves the lipid profile in patients with chronic coronary disease, Universidade Federal do Rio de Janeiro is conducting a study on the effect of Extra Virgin Coconut Oil Treatment Nutritional Associated With Data Anthropometric and Lipid Profile in Patients With Chronic Heart Disease. Malaysia Palm Oil Board and International Medical University (IMU), Kuala Lumpur, Malaysia has done a study on the effect of Dietary Fat Type in Combination With High Protein on Plasma Homocysteine Levels and Selected Markers of Cardiovascular Heart Disease Risk in Human Volunteers. The study address the research question whether palmolein will have a positive influence on plasma total homocysteine levels in human volunteers provided with high-protein diets formulated from common Malaysian foods. Another study is undertaken by the University of Alberta/Stollery Children's Hospital Foundation. The study titled Inflammatory Responses of Intravenous Fish oil, Soybean oil and Medium Chain Triglyceride Fat Emulsions in Young Children Before and After Open Heart Surgery is a blinded, randomized, controlled prospective trial comparing immune response (sepsis, inflammatory response, pulmonary

vasoconstriction) in two groups of infants less than three months old receiving pre and post cardiopulmonary bypass surgery. The infants will receive one out of the two following intravenous lipid preparations: Soybean Oil (n-6), or a combination of Medium Chain Triglyceride i.e. coconut oil, Long Chain Triglyceride i.e. Soybean Oil, and Fish Oil (MCT:LCT:FO). There will be 16 subjects in each group. Effects of a Tocotrienol-Enriched Fraction of Palm Oil and Chinese Red Yeast Rice on Serum Lipids in Hypercholesterolemic Subjects is another study undertaken by the University of California, Los Angeles. The purpose of this study is to determine the effects of a palm-oil derived tocotrienol (TRF) supplement or Chinese red yeast rice (CRYR) individually and in combination on blood cholesterol, and particularly LDL cholesterol, in individuals who have either elevated or normal cholesterol levels. Tocotrienols are members of the vitamin E family, and are found in barley, oats, rye, coconut oil and rice bran oil, but the richest source of tocotrienols is palm oil. Certain of these tocotrienols have been shown to be effective in lowering LDL (or 'bad') cholesterol, with no adverse effects on the HDL (or 'good') cholesterol.

Coconut oil in the Alzheimer's disease

The 'medium chain triglycerides (MCT)' and their applications in accelerating the neuronal metabolism gives hope for neuro degenerative diseases (United States

Patent 6835750). VCO has been reported as a promising regenerative drug for Alzheimer's disease (AD) by Dr. Bruce Fife in his experiments on the remarkable recovery of Steve Newport, 58, from five years of progressive dementia after just 35 days of taking virgin coconut oil (VCO). The efficiency of VCO in controlling neuro degenerative disorders may be due to the phytochemicals or their metabolites present in it. Research in this direction has been taken up by Amrita Vishwa Vidyapeetham by a research group through a project funded, initiated and promoted by Coconut Development Board.

University of South Florida is conducting a Study to Evaluate Coconut Oil for Alzheimer's Disease. This is a randomized, cross over study to determine the efficacy of coconut oil in subjects with mild to moderate Alzheimer's disease.

In the AD collaborative study conducted in July, 2012 and presented in the 5th conference on Clinical trials in Alzheimer's disease (CTAD 2012), the effect of coconut oil in subsiding AD has been emphasized by Michael Rafii, Director, Memory Disorders Clinic, Associate Medical Core Director, Alzheimer's Disease Cooperative Study UC San Diego (http://www.adcs.org/research/eNewsLetter/ADIN_E-Newsletter_July_2012.pdf).

Coconut oil for the Hansen's disease

Hansen's disease (also known as leprosy) is a long-lasting infection caused by bacteria. VCO has been traditionally used as a major support for controlling the disease. However, research interest in this direction has come very recently as the disease is not a major concern at present. The clinical trial of using VCO to control the disease has been

started.

Carmela Dayrit, Philippine Dermatological Society is conducting a study called Virgin Coconut Oil Oral Supplementation for Leprosy Patients. To date, there has been no clinical investigation on the effects of Virgin Coconut Oil (VCO) oral supplementation on patients with Hansen's disease (HD) undergoing medical treatment. This study aims to examine the possible protective effect of exogenous supplementation of VCO on the oxidative stress, antioxidant status, and treatment response among HD patients. Treatment response will be defined as the clinical changes in cutaneous and neurologic manifestations as measured by the clinical response score. This study also aims to investigate the potential of VCO as an adjunct to Multi-Drug Therapy (MDT) in mitigating lepra reactions.

Coconut oil in uremic xerosis

The patients undergoing maintenance renal dialysis (MRD), report several dermatologic complications, of which xerosis (rough and scaly skin) is the most common manifestation, occurring in most of the MRD population. Uremic xerosis is often associated with another common complication of MRD, namely uremic pruritus, and may contribute to its occurrence and severity. Mineral oils such as paraffin have been suggested to control the disease. However, external applications of VCO have been a traditional technique to most of the skin diseases. This concept has been taken up in the clinical trials of Dr. Jacqueline Michelle G. de las Alas of University of the Philippines.

The study is conducted among adult patients with chronic kidney disease undergoing hemodialysis, to prove the efficacy and safety of Virgin Coconut Oil compared to

mineral oil as a therapeutic moisturizer for uremic xerosis.

Coconut oil in the skin disease

Coconut oil in various forms has been used for various skin diseases. The reported benefits of coconut oil for the skin include increased hydration, reduced inflammation and antimicrobial activity. It has been used even as a skin tonic and is found to be safe to even infants.

The Kelkar Scientific Research Centre, Maharashtra has conducted a study to Assess the Efficacy and Safety Of Enhanced Virgin Coconut Oil Cream in Tinea Versicolor. Tinea versicolor is a long-term (chronic) fungal infection of the skin. This study has been conducted to see Effectiveness and Safety of medication (Enhanced Virgin Coconut Oil Cream). Era Lucknow Medical College And Hospital, Lucknow, Uttar Pradesh is conducting another Comparative Clinical Study of Efficacy and Antimicrobial Effects of Olive Oil and Coconut Oil along with Calcineurin Inhibitor Tacrolimus In Xerosis and Atopic Dermatitis. Comparison of olive oil and coconut oil with tacrolimus is done for patients with dry itchy skin. All India Institute of Medical Sciences, Delhi is conducting another study on the effect of Coconut Oil Application in Reducing Water Loss From Skin of Premature Babies in First Week of Life. The skin of newborn infants is immature and ineffective as a barrier. Preterm skin exhibits even more vulnerability to the environment due to poor self regulatory heat mechanisms, paucity of fatty tissue and its thinness. Most preterm babies lose up to 13% of their weight as water loss from their skin during the first week of life. Many strategies have been utilized by neonatologists to decrease this water loss. Oil application on the skin can act as a

non permeable barrier and can help in reducing water loss from the skin. Edible Coconut oil, often used for traditional massage of babies by Indian communities, is culturally acceptable and hence the investigators decided to undertake this study to objectively assess the reduction in water loss from skin after oil application. All India Institute of Medical Sciences, Delhi is also conducting a study on the Effect of Twice Daily Application of Coconut Oil in Reducing Water Loss from Skin of Premature Babies in First Week of Life. The skin of newborn infants is immature and ineffective as a barrier. Preterm skin exhibits even more vulnerability to the environment due to poor self regulatory heat mechanisms, paucity

of fatty tissue and its thinness. Most preterm babies lose up to 13% of their weight as water loss from their skin during the first week of life. Many strategies have been utilized by neonatologists to decrease this water loss. Edible coconut oil application on the skin acts as a non permeable barrier and can help in achieving this. Hence the investigators decided to undertake this study to objectively assess the reduction in water loss from skin after oil application.

Coconut oil in Cholesterol and lipid influence

The effect of coconut oil as a dietary supplement to control obesity has been studied by Dr. Assuncao et al. and is found to be a

promising one. It appears that dietetic supplementation with coconut oil does not cause high lipid levels and seems to promote a reduction in abdominal obesity.

Blood pressure and coconut water

Consumption of coconut water especially tender coconut water helps in regulating the potassium pump. It has been identified as a tonic for hypertension. The clinical trial completed by Alleyne T et al supports the claim.

The clinical trials going on and completed supporting coconut oil as a major dietary supplement, promising drug, potential healer etc. Only few of them have been included in this review. ■

Coconut Oil and Incidence of Coronary Artery Disease

Since coconut oil is dominated by saturated fats, it is maligned as hypercholesterolemia and many physicians, are of the view that the consumption of coconut oil leads to increased serum cholesterol which in turn predisposes an individual to Coronary Heart Disease (CHD). Association between the hypercholesterolemia and CHD is well established but the relationship between the hypercholesterolemia and the intake of coconut oil was not investigated. In a study conducted by the Bio-chemistry Department of the University of Kerala under a sponsored research project of the Board during the VIII Plan, it was revealed that: Consumption of coconut oil did not elevate blood total cholesterol, Consumption of coconut kernel along with coconut oil lowered blood cholesterol significantly, Coconut oil increased blood HDL cholesterol when compared to groundnut oil, Coconut oil did not elevate LDL cholesterol or LDL cholesterol / HDL cholesterol ratio and

that Consumption of coconut oil decreased serum triglycerides.

To substantiate the findings, a clinical study was sponsored through Sree Chithira Thirunal Institute for Medical Sciences and Technology, Thiruvananthapuram during the IX Plan. This research project was sponsored by the Board. The major objective was to find out whether coconut oil is influencing cholesterol level in CAD patients and controls.

Findings of the Study

The study has found that the natural unrefined coconut oil is safe and does not cause any harm to humans. The patients were sub-grouped as exclusive coconut oil consuming group and the rest as mixed oil consuming group. Among both controls and CAD patients, irrespective of the nature of the oil consumed, no difference was observed in the mean levels of total cholesterol or LDL cholesterol. At the same time the mean triglyceride level was lower in exclusive coconut oil users in both the

study groups. This indicates that in CAD patients, the habitual consumption of coconut oil along with normal diet did not elevate the cholesterol or LDL-Cholesterol level as expected.

The non-lipid risk factors including smoking, hypertension, diabetes and overweight showed association with lipid profile among controls. Total cholesterol level showed positive association with hypertension and smoking. HDL-C level showed negative association with smoking only. Triglyceride levels were positively associated with hypertension, smoking, and diabetes and overweight. In the case of CAD patient, triglycerides alone was positively associated with hypertension. Moreover medium chain fatty acids have a fat burning effect which is evident from the lower levels of triglycerides observed in exclusive coconut oil consumers. Therefore natural unrefined coconut oil is safe and does not cause any harm to humans because it is the only oil which has the highest content (63%) of medium chain triglycerides.