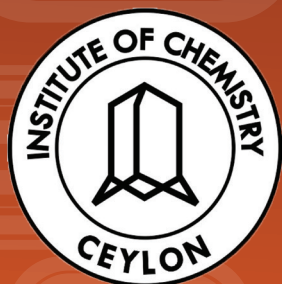


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Investigation of quality parameters of coconut oil for chronic kidney disease patients

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Coconut oil is the major fat source in Sri Lankan traditional diet and 92% of coconut fat is saturated. Medical fraternity were in uncertainty whether coconut oil is safe to consume. Based on high Saturated Fatty Acids (SFA) percentage American Heart Association discouraged the consumption of coconut oil. However, SFA in coconut oil differ from saturated fats in animal fats according to the Ceylon Medical Journal published in 2006.

Chronic Kidney Disease (CKD) is a public health issue and cardiovascular diseases (CVDs) cause for morbidity and mortality among CKD patients. Regular observations and Medical Nutrition Therapy by registered dietitian is vital to address nutrition issues of CKD patients.

Epidemiological studies have failed to clearly establish a relationship between coconut fats, and CVDs. Quality of coconut oil available in Sri Lankan market is not consistent. Purity maintenance of proper standards during various steps in oil production has resulted high quality coconut oil in one producer. (Hettigedara et al., 2013). CKD patients had beneficial effect on management of the disease through diet with 30-35% fat (physically refined coconut oil) (Hettigedara et al., 2016; 2017). The present study was conducted to evaluate the quality of coconut oil in the market and to check the suitability of physically refined coconut oil to continue dietetic therapy for CKD patients.

The objective of this research was to determine the chemical parameters of coconut oil to be used in CKD patients and to assess the lipid profile of CKD patients after prescription of physically refined coconut oil as a source of dietary fat.

Coconut oil samples available in the market (both branded and non-branded) of Colombo area were collected randomly. Samples were chemically analyzed for SLSI specified chemical parameters and additional parameters essential for quality of coconut oil. The CKD

patients in stage IV and V were selected and they were given dietary and life -style modifications and patients were reviewed and monitored at regular intervals by the registered Dietitian- Nutritionist. Physically refined coconut oil was included as a source of fat around 30 %- 35% of total energy. E GFR, serum creatinine and lipid profile of CKD patients were analyzed after 1 year of interval retrospectively. Sample size was 46.

Sample F had the lowest free fatty acid (FFA) percentage while sample I had the highest FFA. Sample F and J had the lowest Peroxide value (PV) while sample C represented the highest. FFA and PV values indicate the degree and hydrolytic degradation of oil and the extent to which rancidity reactions have occurred during the storage, respectively. Sample A had the lowest saponification and highest iodine value while sample B had the lowest iodine value. There is a significant variation in quality among tested samples. Only the sample F had the expected quality as previously reported. There was a significant decrease in serum creatinine levels in 80% and significant increase in eGFR levels in 80% of the subjects. 90% of the subjects had total cholesterol and triglyceride (TG) within normal range. HDL level of 51.51% of subjects was within normal range ($p < 0.05$) ($n = 46$).

There is a wide variation of quality and purity of coconut oil, brands available in Sri Lanka. Consumption of physically refined coconut oil as the fat source is beneficial in improving clinical outcome of CKD patients.

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