

Canola Oil as a Source of Fat in Human Nutrition

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Canola oil, with less than 2% erucic acid, has been evaluated extensively for its safety and nutritional value. The results indicate that canola oil is free from the undesirable properties associated with the older high erucic acid rapeseed oils. The remaining small amounts of erucic acid appear to be of no concern, since erucic acid is a normal fatty acid synthesized by mammals and it does not interfere with the energy production and utilization in the intact organ, as determined by a number of techniques, including ^{31}P NMR measurements.

Based on the many scientific results, canola oil has been given approval of safety by Canadian, American and European health regulatory agencies. This has opened the opportunity for canola oil to be used extensively for its ideal fatty acid profile of low saturated fatty acids, high oleic acid and with sufficient amounts of essential fatty acids.

Canola Oil in Human Nutrition - Physiological Effects

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The finding that oleic acid (OA) was as effective as linoleic acid (LA) in lowering plasma cholesterol and interest in the nutritional properties of the n-3 fatty acids has created appreciable interest in canola oil over the past 5 years. Metabolic studies have shown canola oil equally as effective as sunflower oil, safflower oil, and soybean oil in lowering plasma total cholesterol (TC), low-density lipoprotein (LDL) cholesterol and apolipoprotein B levels of normolipidemic men. Replacement of saturated fat by canola oil in diets providing 34-39% of energy as fat resulted in decreases of 10-20% in plasma TC and LDL levels with no change in HDL level. Canola oil and soybean oil also were equally effective in lowering plasma lipids of subjects fed low-fat (27% of energy) diets and canola oil was equal to sunflower oil and soybean oil in lowering plasma TC and LDL levels in mildly hyperlipidemic subjects. Canola oil also resulted in changes in the n-3 fatty acid composition of platelet and plasma phospholipids. The ratio of LA/LNA in canola oil favored the conversion of LNA to longer chain homologs, in particular EPA (20:5n-3); canola oil (LA/LNA; 2.6/1) was equal to a flax-sunflower-olive oil mixture (ratio of 3/1) and appreciably more effective than soybean oil (ratio of 6/1). Altered platelet function and thromboxane A_2 and prostacyclin (PGI_2) production also have been observed with canola oil although the latter are less consistent than the effects on blood lipids and phospholipid fatty acid composition. Studies suggest that the composition and balance of fatty acids play an important role in the nutritional properties of canola oil.