

Fat & Human Health

Why do we need Fats/Oils?

Fat is an important ingredient of human diet. The functional role of fat in the diet is manifold. Fat is a most concentrated source of energy. One gram of fat gives 9 kcal of energy. Carbohydrates and proteins provide only 4 kcal of energy per gram. Hence fats provide calorie density to the diet. Secondly, fats are essential in the diet for the absorption and mobilization of fat-soluble vitamins such as vitamin A, vitamin E and fat-soluble antioxidants. Thus fat works as a vehicle to carry the fat-soluble vitamins, nutrients and antioxidants in the body. Thirdly, vegetable oils are the only source of essential fatty acids to the body.

Essential fatty acids (EFA) are those fatty acids, which the body cannot synthesize and need to be supplied through diet. EFA's are the precursors for a group of chemically related compounds, known as prostaglandins that are synthesized in the body from EFA. If EFA is not supplied through diet to the body, the body cannot synthesize prostaglandins. Prostaglandin play a key role in regulating many physiological processes in the body, such as controlling blood pressure, vascular damage in the brain and the heart, preventing blood clot in the arteries, lowering cholesterol, uterine contractions during child birth and menstrual cycles, inflammation and other conditions.

Fourthly, fat also helps in raising HDL the so-called good cholesterol. Low-fat diets can result in reduction of HDL cholesterol. Fifthly, fat in the diet imparts certain textural qualities, taste and palatability to the food. Fats and oils are integral lubricants of foods in two ways: through use as release agents as a part of the cooking process and as a lubricant during mastication (chewing). Fats and oils modify flavour release and improve palatability.

Thus fat is an essential nutrient in our balanced diet. Since several studies in literature have directly related the amount and type of fat intake to specific diseases such as cardiovascular disease, cancer, high blood pressure and obesity, so one has to be very particular as to quantity as well as quality of fat in the diet to maintain good health.

Quantity of Fats

Guidelines issued by the National Cholesterol Education Program (NCEP), U.S.A., and widely supported by most experts including the American Heart Association recommend that total calories from fat should not constitute more than 20 to 25 percent of daily calories. Guidelines for ideal fat intake issued in July, 2005, by the National Institute of Nutrition (NIN), Hyderabad (a premier nutrition research institute of Indian Council of Medical Research, Government of India) recommend that the total fat (visible & invisible) in the diet should provide 20-30% of the total energy intake. Therefore, an adult man consuming 2000 calories, should take total fat (visible & non-visible) between 45 to 65 gms. per day.

Apart from visible fat some amount of fat is present in food items like cereals, pulses, milk, eggs, meat etc. as invisible fat. From the data-base generated on fatty acid composition in Indian foods and National Nutrition Monitoring Bureau diet surveys, the daily invisible fat intake is estimated to be 15 gm in rural poor and 25 gm in the urban middle and high-income groups. Thus the daily requirement of visible fat intake works out to be some where between 20 to 50 gms depending upon physical activity and physiological status. According to latest recommendations of the National Institute of Nutrition (NIN) people having sedentary life style should take 20-30 gms. of oil/fat per day. Those who are physically active can take upto 50 gms. of oil/ fat per day.

Types of Fats & their effect on Human Health

Fats are composed of building blocks called fatty acids. There are basically two types of fatty acids i.e saturated and unsaturated fatty acids. Saturated fatty acids (SFA) are those that have single carbon-carbon bond. The unsaturated fatty acids contain double bond in between their carbon atoms. These unsaturated fatty acids can further be divided into two sub-categories :- Mono-unsaturated Fatty Acids (MUFA) and Poly-unsaturated Fatty Acids(PUFA). When there is one double bond, it is termed mono-unsaturated fatty acids (MUFA). When more than one double bond occurs, it is termed as poly-unsaturated fatty acids (PUFA).

Saturated fatty acids are generally solid at room temperature. Oils rich in saturated fatty acids are Desi Ghee (Butter Fat), Palm Oil, Coconut Oil etc.. Saturated fatty acids have the tendency to raise the levels of total cholesterol in the body. But they have a good oxidation stability which is considered desirable for promotion of overall health.

Poly-unsaturated fatty acids are liquid at room temperature. Oils rich in poly-unsaturated fatty acids (PUFA) are Sunflower Oil, Safflower Oil, Soyabean Oil and Corn Oil. Poly-unsaturated fatty acids are known to lower the cholesterol levels but sole & prolonged use of these oil have been found to adversely affect the good cholesterol levels besides causing other health complications due to poor oxidation stability of these fats.

Mono-unsaturated fatty acid are also liquid at room temperature. Oils rich in Mono-unsaturated fatty acids (MUFA) are Groundnut Oil (Peanut Oil) Olive Oil, Canola Oil, Mustard Oil and Rice Bran Oil. These fats are known to lower the levels of bad cholesterol without adversely affecting the levels of good cholesterol. However, this positive impact upon LDL cholesterol is relatively modest. These fats have reasonably good oxidation stability.

Another type of fatty acids which are in news these days are **trans-fatty acids**. Also called trans-fats, these substances occur when poly-unsaturated oils are altered through hydrogenation, a process used to harden liquid vegetable oils into solid foods like margarine, shortening and vanaspati. Recent studies found that trans fatty acids raise LDL cholesterol levels, behaving much like saturated fats. Simultaneously, the trans-fatty acids reduced HDL cholesterol readings. In view of these findings it is advised these days that consumption of trans fatty-acids should be as low as possible.

Recommended Quality of Fats

Guidelines issued by the National Cholesterol Education Program (NCEP), U.S.A., and widely supported by most experts as well as American Heart Association (AHA) recommend that the daily intake of saturated fats and poly-unsaturated fats should not exceed 10 percent of total calorie intake and Mono-unsaturated fats be kept between 10 and 15 percent of total calorie intake. It is further advised that for people who have severe problems with high blood cholesterol even 10% level of saturated fats may be too high. Latest revised Diet and Lifestyle Recommendations issued in the year 2006 by the American Heart Association (AHA), suggest maximum limit for saturated fats as 7% of energy and below 1% of energy for trans-fat.

Guidelines released in July, 2005, by the National Institute of Nutrition (NIN), Hyderabad (INDIA), also suggest that saturated fat intake should not exceed 8-10% of total energy. Poly-unsaturated fats intake should be 8-10% of energy intake consisting of 6-8% linoleic acid (Omega-6) and 1-2% alpha linolenic acid (Omega-3) and the ratio of Omega-6/Omega-3 should ideally be 5 to 10. Mono-unsaturated fats should be 10-12% of the energy intake. It is further suggested that the intake of trans fatty acids (TFA) should be as low as possible and it should not exceed 2% of energy intake. A perusal of the above recommendations would lead to the conclusion that one should use oils/fats or a combination of oils/fats having almost balanced fat composition with moderate levels of saturated fats and poly-unsaturated fats and higher levels of mono-unsaturated fats.

Why only “Ricela” RBO

1. **“Ricela”** Refined Rice Bran Oil is being produced in an ultra-modern processing plant using the latest technology of physical refining (a technology for which we hold the patent) which ensures retention of higher levels of naturally present nutraceuticals such as “Oryzanol & Phyto-sterols”.
2. It is being produced following process standards of developed countries which are more strict than Indian standards wherein only high pressure steam system is used for all indirect heating requirements in place of mineral oil used by most of the edible oil refineries in India. Thereby we ensure world class food safety and the product is certified as HACCP which is an international standard of food safety and the company is also certified as ISO 9001 : 2000.
3. It has not only been refined properly to make it fully odourless but has also been dewaxed and winterized with the technology supplied by a leading Japanese Company, to make it non-hazy in winters.
4. It passes through stringent quality checks before reaching the consumers.
5. It is being produced from rice bran which in turn is being produced from non-GMO varieties of paddy. Hence “Ricela” Refined Rice Bran Oil is a non-GMO Product.
6. It has been declared as the “Best Brand” of Rice Bran Oil by the Globoil India -an international conference on vegetable oil industry held at Mumbai on 23rd September, 2006.
7. Above all, “Ricela” Refined Rice Bran Oil is the product of India’s Highest Production Award Winning Group Company which have the ability & resources to meet all the requirements of its customers in terms of quantity & quality.

Cholesterol Lowering Properties of Rice Bran Oil as compared to other edible oils-some scientific studies

Human trials conducted in the **National Institute of Nutrition, Hyderabad**- a premier nutrition research institute of Indian Council of Medical Research (ICMR), Government of India, have confirmed significant reduction in total cholesterol particularly the triglyceride levels by using Rice Bran Oil (RBO) as **compared to conventional cooking oils.** (see table below)

Subjects	Total Cholesterol (mg/dl)	Triglycerides (mg/dl)
Control Group	244.0 ± 14.0	295.5 ± 33.0
Initial	249.6 ± 16.1	286.3 ± 34.9
After 30 days		
Experimental Group	247.3 ± 10.6	349.8 ± 42.4
Initial	204.0 ± 6.6	236.5 ± 31.9
15 days after RBO	182.7 ± 8.4	212.9 ± 20.0
30 days after RBO		

(Source:- **Journal of the American College of Nutrition, Vol. 10. No. 6, 593-601 (1991),** available on www.jacn.org)

Studies conducted in the **Central Food Technological Research Institute (CFTRI)**, Mysore –a premier research institute of the Government of India had shown significant reduction of bad cholesterols (LDL + VLDL) and increase in good cholesterols (HDL) in rats fed with Refined Rice Bran Oil for 11 weeks as compared to rats fed with **Groundnut Oil** although the fat composition of both the oils is almost similar. The study has attributed the better cholesterol lowering ability of Rice Bran Oil to its unique “Oryzanol” and some other components present in it.

(Source:- **Atherosclerosis, Volume 78, Issues 2-3, August 1989, pages 219-223, abstract available on www.sciencedirect.com/science/journal/00219150**)

Studies conducted in Japan have shown that Rice Bran Oil has better cholesterol lowering power than Sunflower Oil, Corn Oil and Safflower Oil.

(Source: **Japanese Journal of Nutrition, Vol. 20 No. 4 P.,11-13**)

Studies conducted by Reputed Scientists of Tufts University, Boston and University of Massachusetts-Lowell, Lowell, **USA**, have demonstrated greater reduction in bad cholesterols by feeding physically Refined Rice Bran Oil to hamsters as compared to **Canola Oil** (a low erucic acid variety of Rape/Mustard Oil) and **Coconut Oil**.

(Source:- **Journal of Nutritional Biochemistry 16 (2005) 521-529**)

Studies conducted in the University of Lowell, USA, have revealed that Rice Bran Oil has significantly better cholesterol lowering properties than popular **Olive Oil**.

(Source:- **Atherosclerosis**, volume **88**, Issues **2-3**, June 1991, pages **133-142**, abstract available on www.sciencedirect.com/science/journal/00219150)

RICE BRAN OIL MAY HELP TO CONTROL DIABETES

Studies conducted in Taipei Medical University, Taiwan, have shown that **Rice Bran Oil** is effective in increasing insulin sensitivity in case of Type 2 Diabetes.

(Source : American Society for Nutrition J.Nutr. 136: 1472-1476, June 2006 abstract available on www.jn.nutrition.org/cgi/content/abstract/136/6/1472)

RICE BRAN OIL MAY HELP TO CONTROL HIGH BLOOD PRESSURE

A latest study conducted by Japanese researchers and published in the Journal of Agricultural and Food Chemistry (Vol. 54, pp.1914-1920) have shown that rice bran fractions appear to have a beneficial dietary component that could lower blood pressure.

(Source : www.nuraingredients.com/news/ng.asp?id=66188)