

OPTIMUM FAT NUTRITURE: STRIKING A BALANCE



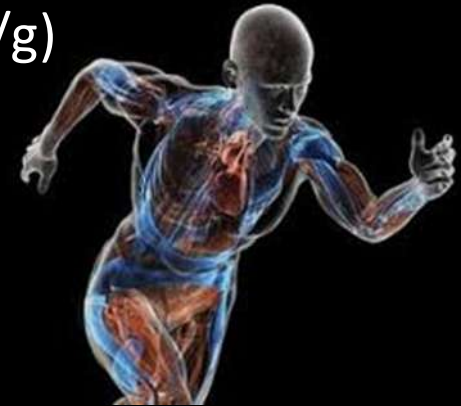
Dr. Rohini Sharma

Consultant Nutritionist and Food Technologist

WHY DO WE NEED FATS

Functional

- Lipids are concentrated sources of energy (9 kcal/g)
- Storage form of energy
- Structural components of biomembranes
- Building blocks of glycolipids and phospholipids
- Helps in absorption of fat soluble vitamins



Sensorial

- Satiety value
- Palatability - taste enhancer
- Texture - Crunch, creaminess, mouth feel
- Aids Preservation



SOURCES IN DIET

Dietary fat

Visible

Fats used at the table or during cooking (vegetable oils, ghee, butter, vanaspati)



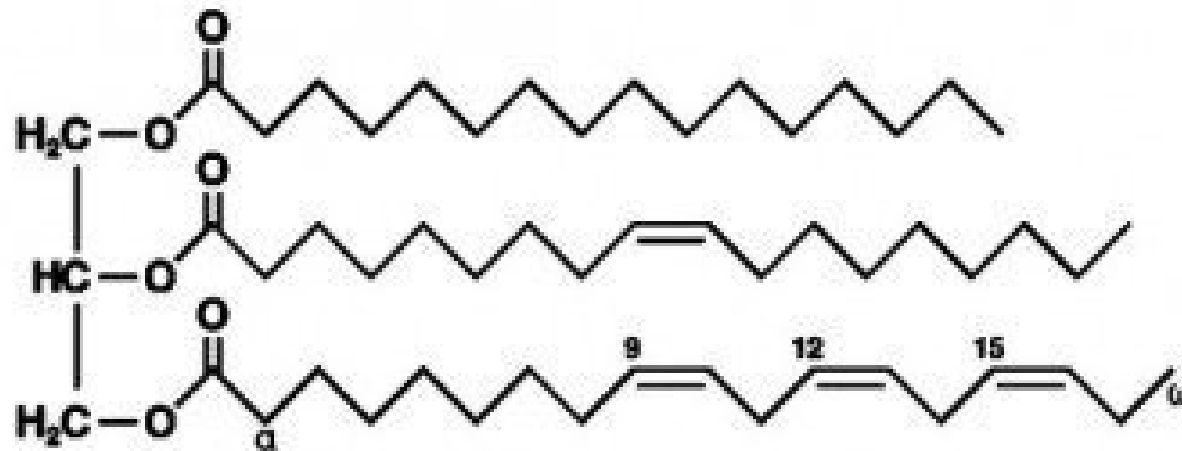
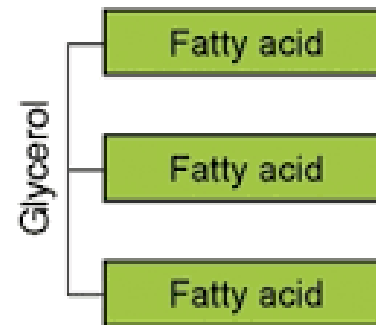
Invisible

Fats present as an integral component of various foods (cereals, pulses, dairy, meat)



CHEMISTRY OF FAT

STRUCTURE OF A TRIGLYCERIDE



TYPES OF FATTY ACIDS (according to the number of double bonds)



Saturated
(no double bond)



Monounsaturated
(1 double bond)



Polyunsaturated
(>1 double bond)

Essential Fatty Acids:

Human body is capable of producing all the fatty acids it needs, except for two:

- Linoleic acid (LA) - an omega-6 fatty acid,
- Alpha-linolenic acid (ALA) - an omega-3 fatty acid.

IMPORTANCE OF OMEGA 3 AND OMEGA 6 FATTY ACIDS

- **Linoleic acid (ω -6)** decreases plasma cholesterol levels
- **α -Linolenic Acid (ω -3)** increases insulin sensitivity, increase peripheral glucose utilization and decreases adiposity. It is also beneficial for prevention of inflammation and accumulation of fatty material in blood vessels (atherosclerosis) and clotting of blood (thrombosis).



IMPORTANCE OF OMEGA 3 AND OMEGA 6 FATTY ACIDS

- A balance of the ω -3 and ω -6 Fatty acids helps in the development of the brain and functioning of the vascular, immune, nervous and renal systems. They are also needed in the foetal stages of growth.

Ideal Ratio of

$\omega - 6$: $\omega - 3$

5 - 10 : 1

OMEGA 3 vs. OMEGA 6

- The composition of dietary fatty acids has changed over the last 100 years. Studies in Paleolithic nutrition suggest that the hunter–gatherer populations consumed equal amounts of omega-6 and omega-3 PUFAs (Eaton *et al.*, 1998).
- Today the ratio between these fatty acids is 10–20:1 in the diet. The total intake of fat and the amount of saturated fats and omega-6 PUFAs have increased, while the intake of omega-3 PUFAs has decreased.

OMEGA 3 vs. OMEGA 6

- The increased amount of omega-6 compared with omega-3 PUFAs in standard diets may have profound effects on human health since studies have indicated that omega-6 PUFAs may shift the physiological status into a prothrombotic, proaggregatory status with increased vasoconstriction and increased blood pressure (Calder, 2005).
- The omega-3 PUFAs are anti inflammatory, antithrombotic and hypolipidemic and thus have beneficial effects in the prevention and/or treatment of several metabolic diseases (Calder, 2005)



FOOD SOURCES OF ESSENTIAL FATTY ACIDS

Type of PUFA	Structure	Source
Omega-3	α -Linolenic acid	Walnuts, flaxseed oil, canola oil Avocado
	EPA	Fatty fish, fish oil
	DHA	Fatty fish, fish oil
Omega-6	Linoleic acid	Corn, safflower, soybean and sunflower oil, rice bran oil, avocado
	Arachidonic acid	Meat, eggs

OILS COMMONLY CONSUMED IN INDIA

SFA rich Oils

- **Coconut oil**
- **Palm oil**

MUFA rich Oils

- **Safflower oil (Oleic rich)**
- **Groundnut oil**
- **Olive oil**
- **Mustard oil**
- **Canola oil**
- **Rice bran**

PUFA rich Oils

- **Safflower Oil (linoleic rich)**
- **Flaxseed Oil**
- **Sunflower Oil**
- **Soy bean Oil**
- **Cottonseed Oil**
- **Corn Oil**
- **Rice Bran oil**

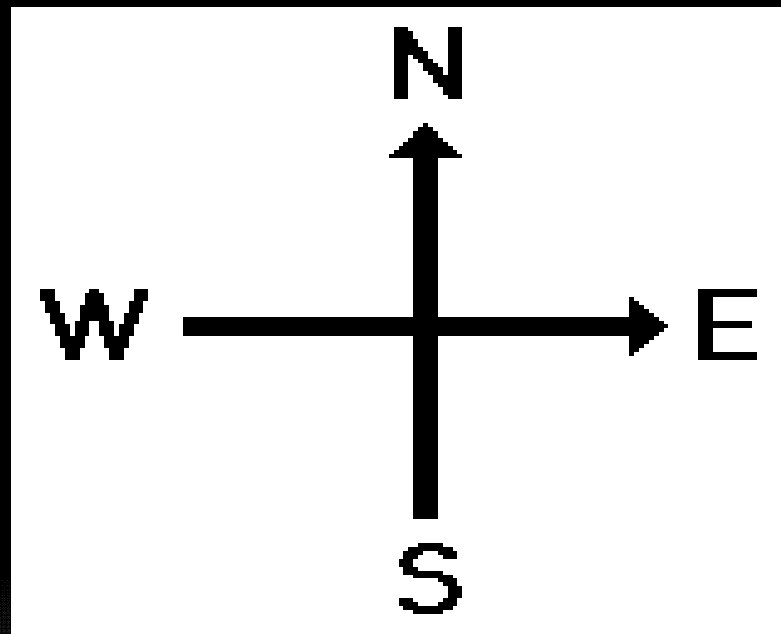


OIL CONSUMPTION PATTERN IN INDIA

Consumption of oils in India driven by local preference and availability,
and Not by NIN guidelines

Mustard/ Groundnut/ rapeseed oil

Groundnut oil



Mustard/rapeseed
oil

Coconut, sesame, groundnut oil

PUFA CONTENT OF VEGETABLE OILS

Vegetable oil	PUFA content (% by weight)	Linoleic acid (n-6)	α -Linolenic acid (n-3)
Canola oil – Low Erucic Acid Rapeseed oil	29.6	20.3	9.3
Corn oil	54.7	53.5	1.2
Flaxseed oil	66	12.7	53.3
Safflower oil	74.6	74.6	0
Soybean oil	57.9	51.1	6.8
Sunflower oil	65.7	65.7	0
Rice Bran Oil	36.8	34.4	2.2
Mustard Oil	26	15	6

LIMITATIONS IN SELECTING HEALTHY OILS ...

Current NIN guidelines suggest that
one should use a

Variety of oils

OR

a blend of 2 or more vegetable oils

to achieve optimum intake of all essential fatty acids

Most individual oils do not provide all the essential
Fatty Acids in NIN recommended proportions



BENEFITS OF BLENDING OILS

- Improved Nutritional Profile
 - ✓ Best of two oils in a single pack
 - ✓ Ideal ratio of Essential fatty acids
 - ✓ Benefits of minor components like Vit E and Oryzanol
 - ✓ Research has shown a synergistic effect of oil blends in certain proportions
- Improved Culinary Attributes
 - ✓ Taste, Aroma, high smoking point for frying
- Improved shelf life
 - ✓ Frying suitability (PUFA are oxidation prone)
- Better Health attributes
 - ✓ Lower absorbability

BLENDING OILS – as per FSSAI

Blended edible vegetable oil means an admixture of any two edible vegetable oils where the proportion by weight of any edible vegetable oil used in the admixture is not less than 20%

The blend shall be clear, free from rancidity, suspended or insoluble matter or any other foreign matter, separated water, added colouring matter, flavouring substances, mineral oil, or any other animal and non-edible oils, or fats, argemone oils, hydrocyanic acid, castor oil and tricresyl phosphate.

BLENDING OILS – FSSAI GUIDELINES

It shall also conform to the following standards, namely:

- a) Moisture and volatile matter not more than 0.2 per cent by weight
- b) Acid value:— Nature of oil Acid Value
 - (1) Both raw edible vegetable oils in the blend Not more than 6.0
 - (2) One raw edible vegetable oil (s) and one refined vegetable oil (s) in the blend Not more than 5.0
 - (3) Both refined edible vegetable oils in the blend Not more than 0.5
- c) Unsaponifiable matter, percent by weight
 - i. Blended with chemically refined rice bran oil Not more than 3.0% by weight
 - ii. Blended with other edible vegetable oil Not more than 1.50% by weight
- d) Flash point Not less than 250°C
- e) Test for Argemone oil shall be negative
- f) However, it may contain food additives permitted in these Regulations and Appendices and shall conform to the standards laid down under regulation 2.2.1 (16).

BLENDING OILS IN THE MARKET

Saffola Gold for a Healthy Heart and Healthy Lifestyle

Reduces bad cholesterol, & antioxidant rich

Rice Bran Oil: 80% by weight

Safflower Oil: 20% by weight

Saffola Active for a weight watchers with low absorb technology

Rice Bran Oil: 80% by weight

Soyabean Oil: 20% by weight

Saffola Total: Pro Healthy Lifestyle

With Low absorb technology

Rice Bran Oil: 70% by weight

Safflower oil: 30% by weight

Saffola Tasty: For Fitness conscious with Low absorb technology

Corn Oil: 60% by weight

Rice Bran Oil: 40% by weight



Saffola Total for a healthy heart.

Proven to work on 8 Biomarkers of Heart Health.

- | | | |
|------------------------|--|-------------------------------|
| • Bad Cholesterol | | • Triglyceride |
| • Good Cholesterol | | • Total Cholesterol |
| • Oxidized Cholesterol | | • LDL |
| • C-reactive Protein | | • Homocysteine |
| • Vitamin A & D | | • Advanced Antioxidant System |

SAFFOLA TOTAL

Rice Bran Oil: 70% by weight
Safflower Oil: 30% by weight



Saffola Gold for pro healthy lifestyle.

- Laserb Technology
- Benefit of 2 Oils
- Helps reduce bad cholesterol
- Power of Antioxidants
- Vitamin A
- MUFA & PUFA
- Vitamin D

SAFFOLA GOLD

Rice Bran Oil : 80% by weight
Safflower oil 20% by weight



Saffola Active for weight watchers.

- Laserb Technology
- Omega 3
- Vitamin E
- Oryzanol

SAFFOLA ACTIVE

Rice bran Oil 80% by weight
Soyabean Oil: 20% by weight



Saffola Tasty for the fitness conscious.

- MUFA & PUFA
- Laserb Technology
- Antioxidants
- Vitamin A
- Vitamin D

SAFFOLA TASTY

Corn oil 60% by weight;
Rice Bran oil: 40% by weight



Saffola Aura is a blend of
80% Refined Olive oil with
20% Refined Flaxseed oil



Cardia Life is a blend of
olive oil and corn oil



Balance Lite Blended Oil contains a blend of Kacchi Ghani Mustard Oil and Refined Rice Bran Oil.



Sun Moon Lite is a blend of Rapeseed oil and Kacchi Ghani Mustard oil

IN CONCLUSION

- Get adequate Fat in the diet to meet your nutritional requirements
- Diet should provide an optimum ratio of Saturated Fatty acids, MUFA and PUFA
- Essential Fatty Acids should be part of the regular diet for improved health & immunity
- Ensure good balance of ω -3 and ω -6 Fatty acids in the diet
- Change your oils frequently to achieve optimum nutrition
- Use Blended oils for benefits of various oils in a single product



**EAT GOOD
FOOD
AND
THANK YOU
FOR LISTENING!**