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Oil Composition and Nutritional Value of Major Oilseed crops

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Introduction :

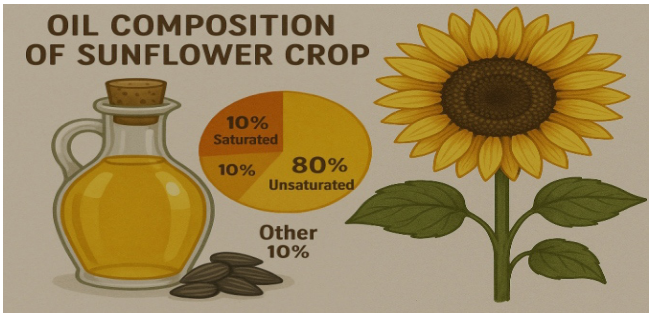
Oil seeds crops are majorly cultivated in India for extraction of oil from their seeds. These oils which are extracted vary in oil content and oil quality such as composition of fatty acids i.e, both saturated and unsaturated acids composition. Sunflower, Sesame ,Safflower ,Peanut etc. [40-50%] are the crops which are having high oil content among all oilseed crops. Cotton seed ,Mustard ,Linseed,,[30-40%] which are having medium oil content and Soybean and corn are having lower oil content [18-22%].

Along with the oil content and composition of fatty acids they are also having rich nutritional value. Such as macro nutrients and micro nutrients and bioactive compounds. Macro nutrients such as fats, carbohydrates, proteins . Micro nutrients such as vitamins and minerals and Bioactive compounds contains antioxidants and phytochemicals those are having health benefits.

Oil composition of different oil seed crops cultivated in India :

Sunflower: oil content in sunflower ranges from 40-50% of its seed weight which depends on the cultivar and environmental conditions of that particular area.

Sunflower contains following amount of oils in 100gm of seed weight ~Linoleic acid content ; 48-74% Oleic acid : 14-40% { can be >80% in high oleic cultivars} Palmitic acid : 4-9%Stearic acid: 1-7 %.



Safflower:

Safflower oil primarily composed of linoleic acid , oleic acid, fatty acids, and small amount of saturated fatty acids like palmitic acid and stearic acid. Linoleic acid ranges from 71 to 79%.

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Sesame: Oil content in sesame varies from 45-50 % . As it is having high oil yield the Sesame crop is considered as highly valuable oilseed crop in India. The oil content in this was as follows ~ Oleic acid : 35-50%Linoleic acid: 35-45% Palmitic acid: 7-12 % Stearic acid: 3-6%

Peanut : Oil content in peanut varies from 45-50% of its seed weight. And tis varies due to biotic and abiotic stress. It is considered as one of the highest oil yielding legume crop.

Oleic acid : 40-60%, Linoleic acid:20-40% , Palmitic acid:8-12% , Stearic acid:2-4% .

The higher the oleic acid content over 70% in peanut improves the shelf life and health profile.

Mustard : Oil content in mustard ranges from 30-40% of its seed weight .The oil content varies with species and environmental conditions. This crop has significant amount of oils in its seed weight ~ Erucic acid : 30-50%, Oleic acid :15-25%, Linoleic acid:12-18%, Alpha Linolenic acid : 6-12%.

High erucic acid content in mustard crop may causes health concerns so variant like canola which is having low erucic acid content are grown for safer consumption.

Crop	Oleic acid	Linoleic acid	Palmitic acid	Stearic aid	Alpha linoleic acid
Sunflower	**14-40%**	**48-74%**	**4-9%**	**1-7%**	-
Sesame	**35-45%**	**35-45%**	**7-12%**	**3-6%**	-
Peanut	**40-60%**	**20-40%**	**8-12%**	**2-4%**	-

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Mustard	**15-25%**	**12-18%**	-	-	**6-12%**
Safflower	**16-20%**	**71-75%**	**6-8%**	**2-3%**	-

Nutritional value of different oilseed crops :

Sunflower:

Protein : 10-25% [globulins:55-60%,Albumins:17-23%,Prolamines:1-4%]

Carbohydrates : 20 g /100g

Amino acids : Methionine: 1.14g/100g,Lysine:1.9g/100g,Threonine :2.2g/100g.

Vitamins : good source of B complex vitamins [nicotinic acid:320mg/kg,thiamine:40mg/kg,Riboflavine;4mg/kg.]

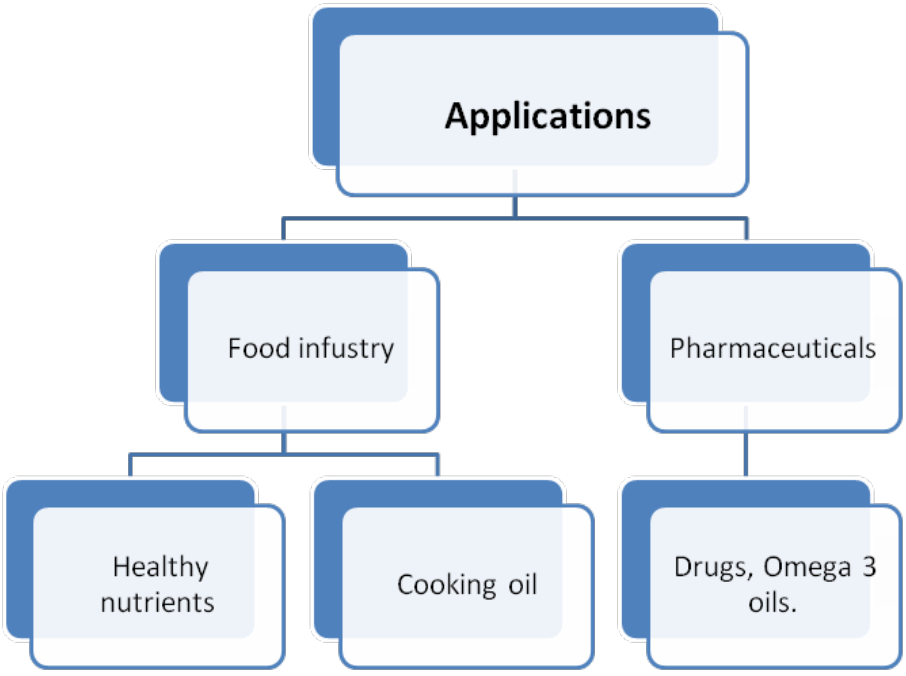
Peanut:

Protein :18.92-30.53%

Amino acids: : Methionine: 4.37g/100g,Lysine:18g/100g,Threonine :12.5g/100g.

Carbohydrates: 16.6g/100g

Vitamins :it's a very good source of B group vitamins namely Niacin and tocopherols at higher levels .and Vitamin A,C,D are present at low levels



Soybean :

Protein : 34-56%

Carbohydrates:25g/100g

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Amino acids: : Methionine: 6.8g/100g,Lysine:40g/100g,Threonine :20.3g/100g,Tryptophan:23.7g/100g

Vitamins: these are good source of water soluble vitamins Beta carotene 0.2-2 mg/g,Thiamin:1-17.5mg/g,Riboflavin:2.3mg/g.

Future outlook :

The future is really secure in terms of energy production by growing this crops such as biodiesel and bio ethanol these will reduce consumption of common fuels. Large production of biodiesel can be obtained with low concentration of crops and left over part can be used as feed for animals. It is clear that in future oilseed crops and their products turned to Nano food elements. Techniques such as Mutagenesis ,breeding, selection . Used to increase production of oils over different various environmental conditions . In future the scientists needs to develop high oil yielding cultivars which are resistant over various damaging factors. We can get economic benefits near in future from the oil seed sector by developing the above mentioned approaches .Every crop of oil seed crop has its own significance in the lifestyle of people. .They are having various types of oils which has its own importance in the health benefits of humans. That's why today and future agriculture is focusing mainly on cultivation and improving oil seed crops and oil content in the crops.

The content of oleic acid is high in peanut (40-60%)low in mustard .The content of linoleic acid high in safflower (71-79%), low in Mustard (12-18%).The content of Palmitic acid high in peanut 8-12% and low in sunflower and Stearic acid high in Sesame.

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