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Sesame (*Sesamum indicum* L.): Vital Source of Major Nutrients

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Sesame (*Sesamum indicum* L.), commonly known as gingelly, til, benniseed, simsim, is a member of the order *Tubiflorae* and belongs family *pedaliaceae* and diploid chromosome number is $2n = 26$. Most of the wild species are native to sub-Saharan Africa. *S. indicum*, the cultivated type, originated in India. It is one of the most important oil seed crops in India, grown next to groundnut, rapeseed and mustard. Sesame has many advantages it grows well in tropical to temperate climates, it can set seed and yield well under fairly high temperatures and it prefers well-drained soils of moderate fertility at pH 5.4 to 6.7.

Botanical Description

Sesame plant is an annual in habit, with indeterminate growth. Plants are erect to semi-erect depending on branching types; ovate to lanceolate leaves with pointed apices, the leaf margins are entire to serrate, and stem is round or square type. Flowers range in size containing small sized tubular calyx and five-lobed corollas and color, e.g., white, violet, red or maroon. Corolla is with one sterile and four functional epipetalous stamens. Qualitative and quantitative traits varies variety to variety.



Sesame Flowering stage



Sesame Pods



Sesame Seeds

Nutrient composition of sesame seeds

Sesame oil, known as queen of oils. Sesame oil is rich in polyunsaturated fat that area used in margarine production and cooking oils. Sesame seeds contain two unique substances, sesamin and sesamolin having a cholesterol lowering effect in humans and to prevent high blood pressure. Both of these also known to increase the hepatic mitochondrial and the peroxisomal fatty acid oxidation rate. The meal known for its high protein content, which is rich in methionine and tryptophan, which makes Sesame meal best for health because methionone and tryptophan is missing a number of other vegetable proteins (Amandeep *et.al.*, 2019).The major protein fraction (globulin) in sesame contains about 95% of 13S globulin and seems to be a simple, salt soluble, very susceptible to heat denaturation and similar in subunit structure to soybean 11S globulin with more hydrophobic



properties. Carbohydrates are composed of 3.2% glucose, 2.6% fructose and 0.2% sucrose while the remaining quantity is dietary fibers in sesame seed. The nutrient composition of sesame presented in the Table 1 (Anilakumar, K. R *et al.* 2014).

Medicinal properties of Sesame seeds and Oil

Sesame oil has wide medical and pharmaceutical application. Sesamin has been found to protect the liver from oxidative damage. This oil has been used for healing wounds for thousands of years. It is naturally antibacterial for common skin pathogens such as *Staphylococcus* and *Streptococcus* as well as common skin fungi such as athlete's foot fungus. It is anti-viral and anti-inflammatory (Anilakumar, K.R. *et al.* 2010). Sesame oil neutralizes oxygen radicals beneath. It penetrates into the skin quickly and enters the blood stream through the capillaries.

Other uses of Sesame Products

Sesame milk can be prepared using decorticated Sesame seeds, that can be an analogues, which can be confirmed as health foods that can be used as dairy substitutes or extenders (Jihad *et al.*, 2009). There are many foods with sesame as an ingredient in different regions of world. It was listed in Table 2.

Table 1: Nutrient composition of sesame

Nutrient Quantity	(%)
Moisture	04.0-05.3
Protein	18.3-25.4
Oil	43.3-44.3
Saturated Fatty Acids (% in oil)	14.0
Monounsaturated Fatty Acids (% in oil)	39.0
Polyunsaturated Fatty acids (% in oil)	46.0
Ash	05.2-06.2
Glucose	03.2
Fructose	02.6
Sucrose	0.2
Phytosterols	0.4

**Table 2: Sesame products used in different regions**

Food	Country
Sesame cakes, wine and brandy	Biblical Babylon
Bread stick, cracker, salad and cooking oil	Worldwide
Raw, powdered and roasted seed	India
Substitute for olive oil	Europe
Bread	Sicily
Cakes	Greece
Soup, spice and seed oil	Africa
Salad and fish oil	Japan
Confectionery	China
Sesame seed buns, chips	United States

Summary

Sesame plant being easy to grow is well suited for cultivation in crop rotation. It is one of the plants where the oil content in seed is high. Sesame products widely applicable in food and medicinal industries. It has potential application in the development of nutraceuticals for weight reduction.

References

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