

Nut (fruit)

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A **nut** is a fruit composed of a hard shell and a seed, which is generally edible. In a general context, however, a wide variety of dried seeds are called nuts, but in a botanical context, there is an additional requirement that the shell does not open to release the seed (indehiscent). The translation of "nut" in certain languages frequently requires paraphrases, as the word is ambiguous.

Most seeds come from fruits that naturally free themselves from the shell, unlike nuts such as hazelnuts, chestnuts, and acorns, which have hard shell walls and originate from a compound ovary. The general and original usage of the term is less restrictive, and many nuts (in the culinary sense), such as almonds, pecans, pistachios, walnuts, and Brazil nuts,^[1] are not nuts in a botanical sense. Common usage of the term often refers to any hard-walled, edible kernel as a nut.^[2]

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Chestnuts are both botanical and culinary nuts.



Some common "culinary nuts", including hazelnuts (which are also botanical nuts), Brazil nuts (which are not botanical nuts, but rather seeds of a capsule), walnuts, pecans, and almonds (which are not botanical nuts but rather the seeds of drupes).

Botanical definition

A nut in botany is a simple dry fruit with one seed (rarely two) in which the ovary wall becomes increasingly hard as it matures, and where the seed remains unattached or free within the ovary wall. Most nuts come from the pistils with *inferior* ovaries (see flower) and all are *indehiscent* (not opening at maturity). True nuts are produced, for example, by some plant families of the order Fagales.

Order Fagales (not all species produce true nuts)

- Family Fagaceae
 - Beech (*Fagus*)
 - Chestnut (*Castanea*)
 - Oak (*Quercus*)
 - Stone-oak (*Lithocarpus*)
 - Tanoak (*Notholithocarpus*)
- Family Betulaceae
 - Hazel, Filbert (*Corylus*)
 - Hornbeam (*Carpinus*)

A small nut may be called a "nutlet". In botany, this term specifically refers to a pyrena or pyrene, which is a seed covered by a stony layer, such as the kernel of a drupe. Walnuts and hickories (Juglandaceae) have fruits that are difficult to classify. They are considered to be nuts under some definitions, but are also referred to as drupaceous nuts. "Tryma" is a specialized term for hickory fruits.

In common use, a "tree nut" is, as the name implies, any nut coming from a tree. This most often comes up regarding allergies, where some people are allergic specifically to peanuts, others to a wider range of nuts that grow in trees.

Culinary definition and uses

A nut in cuisine is a much less restrictive category than a nut in botany, as the term is applied to many seeds that are not botanically true nuts. Any large, oily kernels found within a shell and used in food are commonly called nuts.

Nuts are an important source of nutrients for both humans and wildlife. Because nuts generally have a high oil content, they are a highly prized food and energy source. A large number of seeds are edible by humans and used in cooking, eaten raw, sprouted, or roasted as a snack food, or pressed for oil that is used in cookery and cosmetics. Nuts (or seeds generally) are also a significant source of nutrition for wildlife. This is particularly true in temperate climates where animals such as jays and squirrels store acorns and other nuts during the autumn to keep from starving during the late autumn, all of winter, and early spring.

Nuts used for food, whether true nut or not, are among the most common food allergens.^[3]

Some fruits and seeds that do not meet the botanical definition but are nuts in the culinary sense are:

- Almonds are the edible seeds of drupe fruits — the leathery "flesh" is removed at harvest.
- Baru (*Dipteryx alata*) almond is the seed of a drupe fruit.
- Brazil nut is the seed from a capsule.
- Candlenut (used for oil) is a seed.
- Cashew is the seed^[4] of an accessory fruit.
- Chilean hazelnut or *Gevuina*
- Macadamia is a creamy white kernel of a follicle type fruit.
- Malabar chestnut
- Pecan is the seed of a drupe fruit
- Mongongo
- Peanut is a seed and from a legume type fruit (of the family Fabaceae).
- Pine nut is the seed of several species of pine (coniferous trees).
- Pistachio is the partly dehiscent seed of a thin-shelled drupe.
- Walnut (*Juglans*) is the seed of a drupe fruit
- Yeheb nut is the seed of a desert bush, *Cordeauxia edulis*

Nutrition

Constituents

Nuts are the source of energy and nutrients for the new plant. They contain a relatively large quantity of calories, essential unsaturated and monounsaturated fats including linoleic acid and linolenic acid, vitamins, and essential amino acids. Many nuts are good sources of vitamin E, vitamin B₂, folate, fiber, and the essential minerals magnesium, phosphorus, potassium, copper, and selenium.^[5] Nuts are most healthy in their raw unroasted form,^[6] because roasting can significantly damage and destroy fats during the process.^[7] Unroasted walnuts have twice as many antioxidants as other nuts or seeds.^[6] It is controversial whether increasing dietary antioxidants confers benefit or harm.^{[8][9]}

This table lists the percentage of various nutrients in four unroasted seeds.

Name	Protein	Total Fat	Saturated Fat	Polyunsaturated Fat	Monounsaturated Fat	Carbohydrate
Almonds	21.26	50.64	3.881	12.214	32.155	28.1
Walnuts	15.23	65.21	6.126	47.174	8.933	19.56
Peanuts	23.68	49.66	6.893	15.694	24.64	26.66
Pistachio	20.61	44.44	5.44	13.455	23.319	34.95



A walnut, *left*, and its seed, *right*, having been removed from its pericarp.



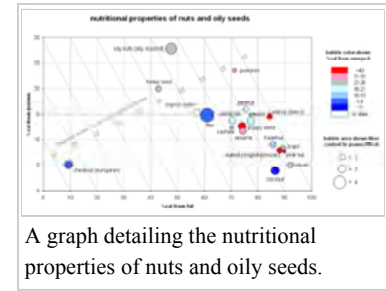
Korean Pine seeds — in shell and shell, above; removed from shell, below



Raw mixed nuts, sold as a snack food. This is a "fancy" mix, meaning that it does not include peanuts.

Benefits

People who consume nuts regularly are less likely to develop coronary heart disease (CHD).^[10] Such consumption is also associated with lower mortality from ischemic heart disease, cardiovascular disease, and all causes.^[11] Nuts were first linked to protection against CHD in 1993.^[12] Consumption of various nuts such as almonds and walnuts can lower serum low density lipoprotein (LDL) concentrations. Although nuts contain various substances thought to possess cardioprotective effects, their omega 3 fatty acid profile is at least in part responsible for the hypolipidemic response.^[13] Nuts have a very low glycemic index (GI)^[14] due to their high unsaturated fat and protein content and relatively low carbohydrate content.^[15] Consequently, dietitians frequently recommend that nuts be included in diets for patients with insulin resistance such as Type 2 diabetes mellitus.^[16] One study found that people who eat nuts live two to three years longer than those who do not.^[17] However, this may be because people who eat nuts tend to eat less junk food.^[18]



A graph detailing the nutritional properties of nuts and oily seeds.

Other uses

The nut of the horse-chestnut tree (*Aesculus* species, especially *Aesculus hippocastanum*), is called a *conker* in the British Isles. Conkers are inedible because they contain toxic glucoside aesculin. They are used in a popular children's game, known as *conkers*, where the nuts are threaded onto a strong cord and then each contestant attempts to break their opponent's conker by hitting it with their own. Horse chestnuts are also popular slingshot ammunition.

Historical usage

Nuts, including acorns, pistachios, prickly water lillies, water chestnuts, and wild almonds, were a major part of the human diet 780,000 years ago. Prehistoric humans developed an assortment of tools to crack open nuts during the Pleistocene period.^[19] The *Aesculus californica* (also known as the California buckeye or California horse-chestnut), was eaten by the Native Americans of California during famines, after the toxic constituents were leached out.

See also

- List of culinary nuts
- List of edible seeds
- List of foods
- Nutmeg
- Achene

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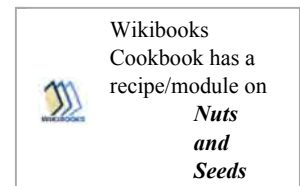
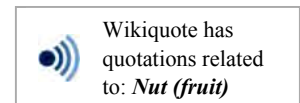
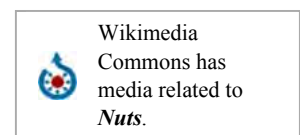
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External links

- Linus Pauling Micronutrient Information Centre (<http://lpi.oregonstate.edu/infocenter/foods/nuts/index.html>) Nuts
- American Journal of Clinical Nutrition ([http://www.ajcn.org/cgi/content/full/70/3/504S?](http://www.ajcn.org/cgi/content/full/70/3/504S?maxtoshow=&HITS=10&hits=10&RESULTFORMAT=&fulltext=nuts&searchid=1&FIRSTINDEX=0&sortspec=relevance&Nuts and their bioactive constituents: effects on serum lipids and other factors that affect disease risk)



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- Nut research (<http://www.nutstudies.org/search.php>)

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