

Food

Food is any substance or material^[1] that is consumed to provide nutritional support for the body or for pleasure. It is usually of [plant](#) or [animal](#) origin, and contains essential [nutrients](#), such as [carbohydrates](#), [fats](#), [proteins](#), [vitamins](#), or [minerals](#). It is ingested and assimilated by an organism to produce energy, stimulate growth, and maintain life.

Historically, people obtained food from [hunting and gathering](#), [farming](#), [ranching](#), and [fishing](#), known as [agriculture](#). Today, most of the [food energy](#) consumed by the [world population](#) is supplied by the [food industry](#) operated by [multinational corporations](#) using [intensive farming](#) and [industrial agriculture methods](#).

[Food safety](#) and [food security](#) are monitored by agencies such as the [International Association for Food Protection](#), [World Resources Institute](#), [World Food Programme](#), [Food and Agriculture Organization](#), and [International Food Information Council](#). They address issues such as [sustainability](#), [biological diversity](#), [climate change](#), [nutritional economics](#), [population growth](#), [water supply](#), and [access to food](#).

The [right to food](#) is a [human right](#) derived from the [International Covenant on Economic, Social and Cultural Rights \(ICESCR\)](#), recognizing the "right to an adequate standard of living, including adequate food", as well as the "fundamental right to be free from hunger".

Food sources

Almost all foods are of plant or animal origin. [Cereal](#) grain is a [staple food](#) that provides more food energy worldwide than any other type of crop. [Maize](#), [wheat](#), and [rice](#) together account for 87% of all grain production worldwide.^[2]

Other foods not from animal or plant sources include various edible [fungi](#), especially [mushrooms](#). Fungi and ambient [bacteria](#) are used in the preparation of [fermented](#) and [pickled](#) foods such as leavened [bread](#), [alcoholic drinks](#), [cheese](#), [pickles](#), [kombucha](#), and [yogurt](#). Another example is [blue-green algae](#) such as [Spirulina](#).^[3] Inorganic substances such as [baking soda](#) and [cream of tartar](#) are also used to chemically alter an ingredient.

Plants



Foods from plant sources

Many [plants](#) or plant parts are eaten as food. There are around 2,000 plant species which are cultivated for food, and many have several distinct [cultivars](#).^[4]

[Seeds](#) of plants are a good source of food for animals, including humans, because they contain the nutrients necessary for the plant's initial growth, including many healthy fats, such as [Omega fats](#). In fact, the majority of food consumed by human beings are seed-based foods. Edible seeds include [cereals](#) (such as [maize](#), [wheat](#), and [rice](#)), [legumes](#) (such as [beans](#), [peas](#), and [lentils](#)), and [nuts](#). [Oilseeds](#) are often pressed to produce

rich oils, such as [sunflower](#), [flaxseed](#), [rapeseed](#) (including [canola oil](#)), and [sesame](#).^[5]

Seeds are typically high in unsaturated fats and, in moderation, are considered a health food, although not all seeds are edible. Large seeds, such as those from a [lemon](#), pose a choking hazard, whereas seeds from [apples](#) and [cherries](#) contain the poison [cyanide](#).

[Fruits](#) are the ripened ovaries of plants, including the seeds within. Many plants have evolved fruits that are attractive as a food source to animals, so that animals will eat the fruits and excrete the seeds some distance away. Fruits, therefore, make up a significant part of the diet of most cultures. Some botanical fruits, such as [tomatoes](#), [pumpkins](#), and [eggplants](#), are eaten as vegetables.^[6] (For more information, see [list of fruits](#).)

[Vegetables](#) are a second type of plant matter that is commonly eaten as food. These include [root vegetables](#) (such as [potatoes](#) and [carrots](#)), [leaf vegetables](#) (such as [spinach](#) and [lettuce](#)), [stem vegetables](#) (such as [bamboo shoots](#) and [asparagus](#)), and [inflorescence vegetables](#) (such as [globe artichokes](#) and [broccoli](#)). Many [herbs](#) and [spices](#) are highly flavorful vegetables.^[7]

Animals

Main article: [Animal source foods](#)

Main article: [Food chain](#)



Various raw [meats](#)

Animals are used as food either directly or indirectly by the products they produce. [Meat](#) is an example of a direct product taken from an animal, which comes from either [muscle](#) systems or from [organs](#). Food products produced by animals include [milk](#) produced by [mammary glands](#), which in many cultures is drunk or processed into [dairy products](#) such as cheese or [butter](#). In addition, birds and other animals lay [eggs](#), which are often eaten, and [bees](#) produce [honey](#), a reduced nectar from flowers, which is a popular sweetener in many cultures. Some cultures [consume blood](#), sometimes in the form of [blood sausage](#), as a thickener for sauces, or in [cured](#), [salted](#) form for times of food scarcity, and others use [blood](#) in stews such as [civet](#).^[8]

Some cultures and people do not consume meat or animal food products for cultural, dietary, health, ethical, or ideological reasons. [Vegetarians](#) do not consume meat. [Vegans](#) do not consume any foods that are or contain [ingredients](#) from an animal source.

Production



[Tractor](#) and [Chaser bin](#)

Main articles: [Agriculture](#), [Food industry](#), and [Genetically modified food](#)
Traditionally, food was obtained through [agriculture](#). With increasing concern in [agribusiness](#) over [multinational corporations](#) owning the world food supply through [patents](#) on [genetically modified food](#), there has been a growing trend toward [sustainable agricultural](#) practices. This approach, partly fueled by consumer demand, encourages [biodiversity](#), local self-reliance and [organic farming](#) methods.^[9] Major influences on food production include international organizations (e.g. the [World Trade Organization](#) and [Common Agricultural Policy](#)), national government policy (or law), and war.^[10]

In popular culture, the mass production of food, specifically meats such as chicken and beef, has come under fire from various documentaries, most recently [Food, Inc.](#), documenting the mass slaughter and poor treatment of animals, often for easier revenues from [large corporations](#). Along with a current trend towards environmentalism, people in Western culture have had an increasing trend towards the use of herbal supplements, foods for a specific group of person (such as dieters, women, or athletes), [functional foods](#) (fortified foods, such as [omega-3](#) eggs), and a more ethnically diverse diet.^[11]

Cuisine preparation

Many cultures have a recognizable [cuisine](#), a specific set of [cooking](#) traditions using various spices or a combination of flavors unique to that culture, which evolves over time. Other differences include preferences (hot or cold, spicy, etc.) and practices, the study of which is known as [gastronomy](#). Many cultures have diversified their foods by means of preparation, cooking methods, and manufacturing. This also includes a complex food trade which helps the cultures to economically survive by way of food, not just by consumption. Some popular types of ethnic foods include [Italian](#), [French](#), [Japanese](#), [Chinese](#), [American](#), [Cajun](#), [Thai](#), and [Indian](#) cuisine. Various cultures throughout the world study the dietary analysis of food [habits](#). While [evolutionarily](#) speaking, as opposed to culturally, humans are [omnivores](#), religion and social constructs such as [morality](#), [activism](#), or [environmentalism](#) will often affect which foods they will consume. Food is eaten and typically enjoyed through the sense of [taste](#), the perception of flavor from eating and drinking. Certain tastes are more enjoyable than others, for evolutionary purposes.

Taste perception

Animals, specifically humans, have five different types of tastes: [sweet](#), [sour](#), [salty](#), [bitter](#), and [umami](#). As animals have [evolved](#), the tastes that

provide the most energy ([sugar](#) and [fats](#)) are the most pleasant to eat while others, such as [bitter](#), are not enjoyable.^{†††} Water, while important for survival, has no taste.^{†††} Fats, on the other hand, especially [saturated fats](#), are thicker and rich and are thus enjoyable to eat.

Sweet



3D structure of [cellulose](#), a [beta-glucan polysaccharide](#).

Generally regarded as the most pleasant taste, [sweetness](#) is almost always caused by a type of simple [sugar](#) such as [glucose](#) or [fructose](#), or [disaccharides](#) such as [sucrose](#), a molecule combining glucose and fructose.^{†††} Complex carbohydrates are long chains and thus do not have the sweet taste. Artificial sweeteners such as [sucralose](#) are used to mimic the sugar molecule, creating the sensation of sweet, without the calories. Other types of sugar include [raw sugar](#), which is known for its amber color, as it is unprocessed. As sugar is vital for energy and survival, the taste of sugar is pleasant.

The [stevia](#) plant contains a compound known as [steviol](#) which, when extracted, has 300 times the sweetness of sugar while having minimal impact on blood sugar.^{†††}

Sour

Sourness is caused by the taste of [acids](#), such as [vinegar](#) or [ethanol](#) in alcoholic beverages. Sour foods include [citrus](#), specifically [lemons](#), [limes](#), and to a lesser degree [oranges](#). Sour is evolutionarily significant as it is a sign for a food that may have gone [rancid](#) due to bacteria.^{†††} Many foods, however, are slightly acidic, and help stimulate the taste buds and enhance flavor.

Salty



Salt mounds in [Bolivia](#).

[Saltiness](#) is the taste of [alkali metal ions](#) such as [sodium](#) and [potassium](#). It is found in almost every food in low to moderate proportions to enhance flavor, although to eat pure salt is regarded as highly unpleasant. There are many different types of salt, with each having a different degree of saltiness, including [sea salt](#), [fleur de sel](#), [kosher salt](#), mined salt, and grey salt. Other than enhancing flavor, its significance is that the body needs and maintains a delicate [electrolyte](#) balance, which is the [kidney](#)'s function. Salt may be iodized, meaning [iodine](#) has been added to it, a necessary nutrient that promotes [thyroid](#) function. Some canned foods, notably [soups](#) or packaged [broths](#), tend to be high in salt as a means of preserving the food longer. Historically speaking, salt has been used as a meat preservative as salt promotes water excretion, thus working as a preservative. Similarly, dried foods also promote food safety.^{†††}

Bitter



The rind or pith of a [lemon](#) is exceptionally bitter, while the lemon itself is characterized as sour.

[Bitterness](#) is a highly unpleasant sensation characterized by having a sharp, pungent taste. Dark, unsweetened [chocolate](#), [caffeine](#), lemon rind, and some types of fruit are known to be bitter.

Umami

[Umami](#), the [Japanese](#) word for delicious, is the least known in Western popular culture, but has a long tradition in Asian cuisine. Umami is the taste of [glutamates](#), especially [monosodium glutamate](#) or MSG. [It](#) is characterized as savory, meaty, and rich in flavor. [Salmon](#) and [mushrooms](#) are foods high in umami. Meat and other animal byproducts are described as having this taste.

Presentation

Main article: [Food presentation](#)

It is known that when presented with food, the consumer "eats" first with their eyes, a universal psychological phenomenon. Food presented in a clean and appetizing way will encourage a good flavor, even if unsatisfactory. [It](#)

Contrast in texture

Texture plays a crucial role in the enjoyment of eating foods. Contrasts in textures, such as something crunchy in an otherwise smooth dish, may increase the appeal of eating it. Common examples include adding [granola](#) to [yogurt](#), adding [croutons](#) to a [salad](#) or [soup](#), and toasting bread to enhance its crunchiness for a smooth topping, such as jam or butter. [It](#)

Contrast in taste

Another universal phenomenon regarding food is the appeal of contrast in taste and presentation. Opposite flavors, such as [sweet](#) and [saltiness](#), tend to go well together, such as in [kettle corn](#) and with [nuts](#).

Food preparation

While many foods can be eaten raw, many foods undergo some form of preparation for reasons of safety, [palatability](#), [texture](#), or [flavor](#). At the simplest level this may involve washing, cutting, trimming, or adding other foods or ingredients, such as spices. It may also involve mixing, heating or cooling, [pressure cooking](#), fermentation, or combination with other food. In a home, most food preparation takes place in a [kitchen](#). Some preparation is done to enhance the [taste](#) or aesthetic appeal; other preparation may help to [preserve](#) the food; others may be involved in

cultural identity. A [meal](#) is made up of food which is prepared to be eaten at a specific time and place. ^[21]

Animal preparation



Workers and cattle in a [slaughterhouse](#)

The preparation of animal-based food usually involves [slaughter](#), [evisceration](#), hanging, portioning, and [rendering](#). In developed countries, this is usually done outside the home in [slaughterhouses](#), which are used to process animals en masse for meat production. Many countries regulate their slaughterhouses by law. For example, the [United States](#) has established the [Humane Slaughter Act](#) of 1958, which requires that an animal be stunned before killing. This act, like those in many countries, exempts slaughter in accordance to religious law, such as [kosher](#), [shechita](#), and dhabi a halal. Strict interpretations of [kashrut](#) require the animal to be fully aware when its carotid artery is cut. ^[22]

On the local level, a butcher may commonly break down larger animal meat into smaller manageable cuts, and pre-wrap them for commercial sale or wrap them to order in butcher paper. In addition, fish and [seafood](#) may be fabricated into smaller cuts by a fish monger. However fish butchery may be done on board a fishing vessel and quick-frozen for preservation of quality. ^[23]

Cooking

Main article: [Cooking](#)



Cooking with a [wok](#) in China

The term "cooking" encompasses a vast range of methods, tools, and combinations of ingredients to improve the flavor or digestibility of food. Cooking technique, known as [culinary art](#), generally requires the selection, measurement, and combining of ingredients in an ordered procedure in an effort to achieve the desired result. Constraints on success include the variability of ingredients, ambient conditions, [tools](#), and the skill of the individual cook. ^[24] The diversity of cooking worldwide is a reflection of the myriad nutritional, aesthetic, agricultural, economic, cultural, and religious considerations that affect it. ^[25]

Cooking requires applying heat to a food which usually, though not always, chemically changes the molecules, thus changing its flavor, [texture](#), appearance, and nutritional properties. ^[26] Cooking certain proteins, such as egg whites, meats, and fish, denatures the protein, causing it to firm. There is archaeological evidence of roasted foodstuffs at [Homo erectus](#) campsites dating from 420,000 years ago. ^[27] Boiling as a means of cooking requires a container, and has been practiced at least since the 10th

millennium BC with the introduction of [pottery](#).^[28]

Cooking equipment

Main article: [Cookware and bakeware](#)

There are many different types of equipment used for cooking.

[Ovens](#) are mostly hollow devices that get very hot (up to 500 ° F) and are used for baking or roasting and offer a dry-heat cooking method. Different cuisines will use different types of ovens; for example, Indian culture uses a [Tandoor](#) oven, which is a cylindrical clay oven which operates at a single high temperature.^[29] Western kitchens use variable temperature [convection ovens](#), conventional ovens, [toaster ovens](#), or non-radiant heat ovens like the [microwave oven](#). Classic Italian cuisine includes the use of a brick oven containing burning wood. Ovens may be wood-fired, coal-fired, [gas](#), [electric](#), or oil-fired.^[30] —



A [stainless steel frying pan](#)

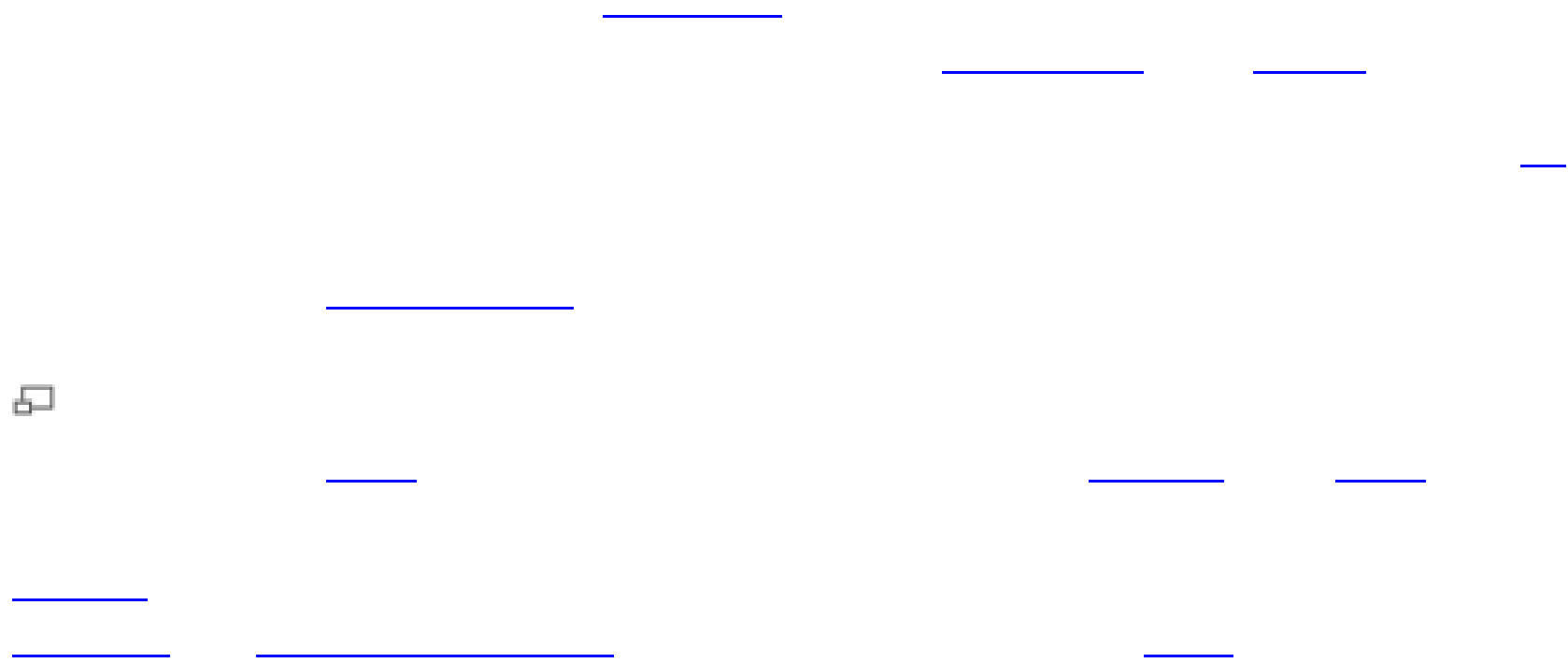
Various types of cook-tops are used as well. They carry the same variations of fuel types as the ovens mentioned above. Cook-tops are used to heat vessels placed on top of the heat source, such as a [sauté pan](#), sauce pot, [frying pan](#), or [pressure cooker](#). These pieces of equipment can use either a moist or dry cooking method and include methods such as [steaming](#), [simmering](#), [boiling](#), and [poaching](#) for moist methods, while the dry methods include [sautéing](#), [pan frying](#), and [deep-frying](#).^[31]



Traditional [asado](#)

In addition, many cultures use grills for cooking. A [grill](#) operates with a radiant heat source from below, usually covered with a metal grid and sometimes a cover. An open pit barbecue in the American south is one example along with the American style outdoor grill fueled by wood, liquid propane, or charcoal along with soaked wood chips for smoking.^[32] A [Mexican](#)

style of barbecue is called [barbacoa](#), which involves the cooking of meats



such as whole sheep over an open fire. In [Argentina](#), an [asado](#) (Spanish

for "grilled") is prepared on a grill held over an open pit or fire made

upon the ground, on which a whole animal or smaller cuts are grilled.^[3]

Raw food preparation

Main article: [Raw foodism](#)

Many types of [fish](#) ready to be eaten, including [salmon](#) and [tuna](#).

Certain cultures highlight animal and vegetable foods in their raw state.

[Salads](#) consisting of raw vegetables or fruits are common in many cuisines.

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