Ham

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[Jump to navigation](https://en.wikipedia.org/wiki/Ham#mw-head)[Jump to search](https://en.wikipedia.org/wiki/Ham#p-search)

*For the cured but uncooked leg of pork, see*[*Gammon (meat)*](https://en.wikipedia.org/wiki/Gammon_(meat))*. For other uses, see*[*Ham (disambiguation)*](https://en.wikipedia.org/wiki/Ham_(disambiguation))*.*

[](https://en.wikipedia.org/wiki/File:Ham_(4).jpg)

Half ham

[](https://en.wikipedia.org/wiki/File:Schinken-gekocht.jpg)

Typical slice of ham

**Ham** is [pork](https://en.wikipedia.org/wiki/Pork) from a leg [cut](https://en.wikipedia.org/wiki/Cut_of_pork) that has been [preserved](https://en.wikipedia.org/wiki/Food_preservation) by wet or dry [curing](https://en.wikipedia.org/wiki/Curing_(food_preservation)), with or without [smoking](https://en.wikipedia.org/wiki/Smoking_(cooking)).[[1]](https://en.wikipedia.org/wiki/Ham#cite_note-Chambers-1) As a [processed meat](https://en.wikipedia.org/wiki/Processed_meat), the term "ham" includes both whole cuts of meat and ones that have been mechanically formed.

Ham is made around the world, including a number of highly coveted regional specialties, such as [Westphalian ham](https://en.wikipedia.org/wiki/Westphalian_ham" \o "Westphalian ham) and some varieties of [Spanish *jamón*](https://en.wikipedia.org/wiki/Jam%C3%B3n). In addition, numerous ham products have specific geographical naming protection, such as [Prosciutto di Parma](https://en.wikipedia.org/wiki/Prosciutto_di_Parma) and Prosciutto Toscano in Europe, and [Smithfield ham](https://en.wikipedia.org/wiki/Smithfield_ham) in the US.



**Contents**

* [1History](https://en.wikipedia.org/wiki/Ham#History)
* [2Methods](https://en.wikipedia.org/wiki/Ham#Methods)
  + [2.1Dry-cured](https://en.wikipedia.org/wiki/Ham#Dry-cured)
  + [2.2Wet-cured](https://en.wikipedia.org/wiki/Ham#Wet-cured)
  + [2.3Smoking](https://en.wikipedia.org/wiki/Ham#Smoking)
  + [2.4Labeling](https://en.wikipedia.org/wiki/Ham#Labeling)
  + [2.5Protected designations](https://en.wikipedia.org/wiki/Ham#Protected_designations)
* [3Uses](https://en.wikipedia.org/wiki/Ham#Uses)
* [4Health effects](https://en.wikipedia.org/wiki/Ham#Health_effects)
* [5See also](https://en.wikipedia.org/wiki/Ham#See_also)
* [6References](https://en.wikipedia.org/wiki/Ham#References)
* [7External links](https://en.wikipedia.org/wiki/Ham#External_links)

History[[edit](https://en.wikipedia.org/w/index.php?title=Ham&action=edit&section=1" \o "Edit section: History)]

The preserving of pork leg as ham has a long history, with [Cato the Elder](https://en.wikipedia.org/wiki/Cato_the_Elder) writing about the "salting of hams" in his [*De Agri Cultura*](https://en.wikipedia.org/wiki/De_Agri_Cultura) tome around 160 BC.[[2]](https://en.wikipedia.org/wiki/Ham#cite_note-2)

There are claims that the Chinese were the first people to mention the production of cured ham.[[3]](https://en.wikipedia.org/wiki/Ham#cite_note-zeuthen-3) [Larousse Gastronomique](https://en.wikipedia.org/wiki/Larousse_Gastronomique) claims an origin from [Gaul](https://en.wikipedia.org/wiki/Gaul).[[4]](https://en.wikipedia.org/wiki/Ham#cite_note-4) It was certainly well established by the Roman period, as evidenced by an import trade from Gaul mentioned by [Marcus Terentius Varro](https://en.wikipedia.org/wiki/Marcus_Terentius_Varro) in his writings.[[3]](https://en.wikipedia.org/wiki/Ham#cite_note-zeuthen-3)

The modern word "ham" is derived from the [Old English](https://en.wikipedia.org/wiki/Old_English) *ham* or *hom* meaning the hollow or bend of the knee, from a Germanic base where it meant "crooked". It began to refer to the cut of pork derived from the hind leg of a [pig](https://en.wikipedia.org/wiki/Pig) around the 15th century.[[5]](https://en.wikipedia.org/wiki/Ham#cite_note-5)

Because of the preservation process, ham is a compound foodstuff or ingredient, being made up of the original meat, as well as the remnants of the preserving agent(s), such as salt, but it is still recognised as a food in its own right.[[6]](https://en.wikipedia.org/wiki/Ham#cite_note-6)

Methods[[edit](https://en.wikipedia.org/w/index.php?title=Ham&action=edit&section=2" \o "Edit section: Methods)]

Ham is produced by [curing](https://en.wikipedia.org/wiki/Curing_(food_preservation)) raw pork by [salting](https://en.wikipedia.org/wiki/Salting_(food)), also known as dry curing, or [brining](https://en.wikipedia.org/wiki/Brining), also known as wet curing. Additionally, [smoking](https://en.wikipedia.org/wiki/Smoking_(cooking)) may be employed. Besides salt, several ingredients may be used to obtain flavoring and preservation, from black pepper (e.g. Prosciutto Toscano) to saffron (e.g. the "Zafferano di San Gimignano").

**Dry-cured**[[edit](https://en.wikipedia.org/w/index.php?title=Ham&action=edit&section=3" \o "Edit section: Dry-cured)]

[](https://en.wikipedia.org/wiki/File:ProsciuttoSeaSalt.JPG)

Sea salt being added to raw pork leg as part of a dry cure process

Traditional dry cure hams may use only salt as the curative agent, such as with San Daniele or Parma hams, although this is comparatively rare.[[7]](https://en.wikipedia.org/wiki/Ham#cite_note-meat-7) This process involves cleaning the raw meat, covering it in salt while it is gradually pressed draining all the blood. Specific herbs and spices may be used to add flavour during this step. The hams are then washed and hung in a dark, temperature-regulated place until dry. It is then hung to air for another period of time.

The duration of the curing process varies by the type of ham, with, for example, Serrano ham curing in 9–12 months, Parma hams taking more than 12 months, and Iberian ham taking up to 2 years to reach the desired flavour characteristics.[[8]](https://en.wikipedia.org/wiki/Ham#cite_note-8) Some dry cured hams, such as the [Jinhua ham](https://en.wikipedia.org/wiki/Jinhua_ham" \o "Jinhua ham), take approximately 8 to 10 months to complete.[[9]](https://en.wikipedia.org/wiki/Ham#cite_note-Zhou-9)

Most modern dry cure hams also use [nitrites](https://en.wikipedia.org/wiki/Nitrite) (either [sodium nitrite](https://en.wikipedia.org/wiki/Sodium_nitrite) or [potassium nitrate](https://en.wikipedia.org/wiki/Potassium_nitrate)), which are added along with the salt. Nitrates are used because they prevent bacterial growth and, in a reaction with the meat's [myoglobin](https://en.wikipedia.org/wiki/Myoglobin), give the product a desirable dark red color. The amount and mixture of salt and nitrites used have an effect on the shrinkage of the meat.[[10]](https://en.wikipedia.org/wiki/Ham#cite_note-10) Because of the toxicity of nitrite (the lethal dose of nitrite for humans is about 22 mg per kg body weight), some areas specify a maximum allowable content of nitrite in the final product. Under certain conditions, especially during cooking, nitrites in meat can react with degradation products of [amino acids](https://en.wikipedia.org/wiki/Amino_acid), forming [nitrosamines](https://en.wikipedia.org/wiki/Nitrosamine), which are known [carcinogens](https://en.wikipedia.org/wiki/Carcinogen).[[11]](https://en.wikipedia.org/wiki/Ham#cite_note-11)

The dry curing of ham involves a number of [enzymatic](https://en.wikipedia.org/wiki/Enzyme) reactions. The enzymes involved are [proteinases](https://en.wikipedia.org/wiki/Proteinase) ([cathepsins](https://en.wikipedia.org/wiki/Cathepsin" \o "Cathepsin) – [B](https://en.wikipedia.org/wiki/Cathepsin_B), [D](https://en.wikipedia.org/wiki/Cathepsin_D), [H](https://en.wikipedia.org/wiki/Cathepsin_H) & [L](https://en.wikipedia.org/wiki/Cathepsin_L1), and [calpains](https://en.wikipedia.org/wiki/Calpain" \o "Calpain)) and [exopeptidases](https://en.wikipedia.org/wiki/Exopeptidase" \o "Exopeptidase) ([peptidase](https://en.wikipedia.org/wiki/Peptidase) and [aminopeptidase](https://en.wikipedia.org/wiki/Aminopeptidase" \o "Aminopeptidase)).[[12]](https://en.wikipedia.org/wiki/Ham#cite_note-toldra-12) These enzymes cause [proteolysis](https://en.wikipedia.org/wiki/Proteolysis) of muscle tissue, which creates large numbers of small [peptides](https://en.wikipedia.org/wiki/Peptide) and free [amino acids](https://en.wikipedia.org/wiki/Amino_acid), while the [adipose](https://en.wikipedia.org/wiki/Adipose) tissue undergoes [lipolysis](https://en.wikipedia.org/wiki/Lipolysis) to create free fatty acids.[[12]](https://en.wikipedia.org/wiki/Ham#cite_note-toldra-12) Salt and phosphates act as strong inhibitors of [proteolytic activity](https://en.wikipedia.org/wiki/Proteolysis" \o "Proteolysis).[[13]](https://en.wikipedia.org/wiki/Ham#cite_note-13) Animal factors influencing enzymatic activity include age, weight, and breed.[[14]](https://en.wikipedia.org/wiki/Ham#cite_note-14) During the process itself, conditions such as temperature, duration, water content, [redox potential](https://en.wikipedia.org/wiki/Redox_potential), and salt content all have an effect.[[12]](https://en.wikipedia.org/wiki/Ham#cite_note-toldra-12)

The salt content in dry-cured ham varies throughout a piece of meat, with gradients determinable through sampling and testing or non-invasively through [CT scanning](https://en.wikipedia.org/wiki/X-ray_computed_tomography).[[15]](https://en.wikipedia.org/wiki/Ham#cite_note-15)

**Wet-cured**[[edit](https://en.wikipedia.org/w/index.php?title=Ham&action=edit&section=4" \o "Edit section: Wet-cured)]

Wet-cured hams are [brined](https://en.wikipedia.org/wiki/Brining), which involves the immersion of the meat in a [brine](https://en.wikipedia.org/wiki/Brine), sometimes with other ingredients such as sugar also added for flavour. Meat is typically kept in the brine for around 3 to 14 days.[[7]](https://en.wikipedia.org/wiki/Ham#cite_note-meat-7) Wet curing also has the effect of increasing volume and weight of the finished product, by about 4%.

The wet curing process can also be achieved by pumping the curing solution into the meat. This can be quicker, increase the weight of the finished product by more than immersion, and ensure a more even distribution of salt through the meat. This process is quicker than traditional brining, normally being completed in a few days.[[16]](https://en.wikipedia.org/wiki/Ham#cite_note-16)

**Smoking**[[edit](https://en.wikipedia.org/w/index.php?title=Ham&action=edit&section=5" \o "Edit section: Smoking)]

Ham can also be additionally preserved through [smoking](https://en.wikipedia.org/wiki/Smoking_(cooking)), in which the meat is placed in a smokehouse (or equivalent) to be cured by the action of smoke.

The main flavor compounds of smoked ham are [guaiacol](https://en.wikipedia.org/wiki/Guaiacol" \o "Guaiacol), and its 4-, 5-, and 6-methyl derivatives as well as 2,6-dimethylphenol. These compounds are produced by combustion of lignin, a major constituent of wood used in the smokehouse.[[17]](https://en.wikipedia.org/wiki/Ham#cite_note-17)

**Labeling**[[edit](https://en.wikipedia.org/w/index.php?title=Ham&action=edit&section=6" \o "Edit section: Labeling)]

In many countries the term is now protected by statute, with a specific definition. For instance, in the United States, the [Code of Federal Regulations](https://en.wikipedia.org/wiki/Code_of_Federal_Regulations) (CFR) says that "the word 'ham', without any prefix indicating the species of animal from which derived, shall be used in labeling only in connection with the hind legs of swine".[[18]](https://en.wikipedia.org/wiki/Ham#cite_note-18)

In addition to the main categories, some processing choices can affect legal labeling. For instance, in the United States, a "smoked" ham must have been smoked by hanging over burning wood chips in a [smokehouse](https://en.wikipedia.org/wiki/Smokehouse) or an atomized spray of [liquid smoke](https://en.wikipedia.org/wiki/Liquid_smoke) such that the product appearance is equivalent; a "[hickory](https://en.wikipedia.org/wiki/Hickory)-smoked" ham must have been smoked using only hickory. However, injecting "smoke flavor" is not legal grounds for claiming the ham was "smoked"; these are labeled "smoke flavor added". Hams can only be labeled "honey-cured" if honey was at least 50% of the sweetener used, is at least 3% of the formula, and has a discernible effect on flavor. So-called "lean" and "extra lean" hams must adhere to maximum levels of fat and [cholesterol](https://en.wikipedia.org/wiki/Cholesterol) per 100 grams of product.

Whole fresh pork leg can be labeled as *fresh ham* in the United States.

**Protected designations**[[edit](https://en.wikipedia.org/w/index.php?title=Ham&action=edit&section=7" \o "Edit section: Protected designations)]

[](https://en.wikipedia.org/wiki/File:Making_Jambon_de_Bayonne--Step_4.jpg)

Hams aging in an atmospherically controlled storage room in [Mazerolles](https://en.wikipedia.org/wiki/Mazerolles,_Pyr%C3%A9n%C3%A9es-Atlantiques" \o "Mazerolles, Pyrénées-Atlantiques), Béarn, Pyrénées-Atlantiques

A number of hams worldwide have some level of protection of their unique characteristics, usually relating to their method of preservation or location of production or processing. Dependent on jurisdiction, rules may prevent any other product being sold with the particular appellation, such as through the [European protected geographical indication](https://en.wikipedia.org/wiki/Geographical_indications_and_traditional_specialities_in_the_European_Union).

**Belgium**

* [Jambon d'Ardenne](https://en.wikipedia.org/wiki/Jambon_d%27Ardenne) – [Wallonia](https://en.wikipedia.org/wiki/Wallonia)

**Bulgaria**

* [Elenski but](https://en.wikipedia.org/wiki/Elenski_but) – [Elena](https://en.wikipedia.org/wiki/Elena_(town))

**China**

* [Anfu ham](https://en.wikipedia.org/wiki/Anfu_ham)- [Jiangxi](https://en.wikipedia.org/wiki/Jiangxi)
* [Jinhua ham](https://en.wikipedia.org/wiki/Jinhua_ham) – [Jinhua](https://en.wikipedia.org/wiki/Jinhua" \o "Jinhua)
* [Rugao ham](https://en.wikipedia.org/wiki/Rugao_ham) – [Rugao](https://en.wikipedia.org/wiki/Rugao" \o "Rugao)
* [Xuanwei ham](https://en.wikipedia.org/wiki/Xuanwei_ham) – [Xuanwei](https://en.wikipedia.org/wiki/Xuanwei" \o "Xuanwei)

**Czechoslovakia**

* [Pražká Šunka ("Prague Ham")](https://en.wikipedia.org/wiki/Prague_Ham) – [Prague](https://en.wikipedia.org/wiki/Prague)

**Croatia**

* [Pršut](https://en.wikipedia.org/wiki/Pr%C5%A1ut)

**France**

* [Bayonne ham](https://en.wikipedia.org/wiki/Bayonne_ham) (Jambon de Bayonne) – [Bayonne](https://en.wikipedia.org/wiki/Bayonne)
* Jambon de Paris – [Paris](https://en.wikipedia.org/wiki/Paris)

**Germany**

* [Ammerländer Schinken](https://en.wikipedia.org/wiki/Ammerl%C3%A4nder_Schinken) – [Ammerland](https://en.wikipedia.org/wiki/Ammerland" \o "Ammerland)
* [Schwarzwälder Schinken](https://en.wikipedia.org/wiki/Black_Forest_ham) – [Black Forest](https://en.wikipedia.org/wiki/Black_Forest)
* [Westfälischer Schinken](https://en.wikipedia.org/wiki/Westphalia_ham) – [Westphalia](https://en.wikipedia.org/wiki/Westfalen)

**Italy**

* Prosciutto Toscano – [Tuscany](https://en.wikipedia.org/wiki/Tuscany)
* [Prosciutto di Parma](https://en.wikipedia.org/wiki/Prosciutto_di_Parma) – [Parma](https://en.wikipedia.org/wiki/Parma)
* [San Daniele](https://en.wikipedia.org/wiki/San_Daniele_del_Friuli)
* [Speck Alto Adige](https://en.wikipedia.org/wiki/Speck_Alto_Adige_PGI) – [South Tyrol](https://en.wikipedia.org/wiki/South_Tyrol)
* [Vallée d’Aoste Jambon de Bosses](https://en.wikipedia.org/wiki/Vall%C3%A9e_d%E2%80%99Aoste_Jambon_de_Bosses) – [Saint-Rhémy-en-Bosses](https://en.wikipedia.org/wiki/Saint-Rh%C3%A9my-en-Bosses), [Aosta Valley](https://en.wikipedia.org/wiki/Aosta_Valley" \o "Aosta Valley)

**Luxembourg**

* [Éisleker ham](https://en.wikipedia.org/wiki/%C3%89isleker_Ham) – [Oesling](https://en.wikipedia.org/wiki/Oesling" \o "Oesling) region

**Montenegro**

* [Njeguška pršuta](https://en.wikipedia.org/wiki/Njegu%C5%A1ka_pr%C5%A1uta) – [Njeguši](https://en.wikipedia.org/wiki/Njegu%C5%A1i" \o "Njeguši), [Montenegro](https://en.wikipedia.org/wiki/Montenegro)

**Portugal**

* [fiambre](https://en.wikipedia.org/wiki/Fiambre)
* [presunto](https://en.wikipedia.org/wiki/Presunto)

**Slovenia**

* [Kraški pršut](https://en.wikipedia.org/w/index.php?title=Kra%C5%A1ki_pr%C5%A1ut&action=edit&redlink=1)[[19]](https://en.wikipedia.org/wiki/Ham#cite_note-19)

**Spain**

* [jamón serrano](https://en.wikipedia.org/wiki/Jam%C3%B3n_serrano) (Serrano ham),[[20]](https://en.wikipedia.org/wiki/Ham#cite_note-20)
* [jamón ibérico](https://en.wikipedia.org/wiki/Jam%C3%B3n_ib%C3%A9rico),[[21]](https://en.wikipedia.org/wiki/Ham#cite_note-21) made from the *ibérico* pig breed
* [Lacón Gallego](https://en.wikipedia.org/wiki/Lac%C3%B3n_Gallego), from [Galicia](https://en.wikipedia.org/wiki/Galicia_(Spain))
* [Jamón](https://en.wikipedia.org/wiki/Jam%C3%B3n) from [Los Pedroches](https://en.wikipedia.org/wiki/Los_Pedroches) ([Córdoba province](https://en.wikipedia.org/wiki/Province_of_C%C3%B3rdoba_(Spain)))
* [Jamón](https://en.wikipedia.org/wiki/Jam%C3%B3n) from Huelva (including *Jabugo*), from [Huelva province](https://en.wikipedia.org/wiki/Huelva_province), [Andalusia](https://en.wikipedia.org/wiki/Andalusia)
* [Jamón](https://en.wikipedia.org/wiki/Jam%C3%B3n) from [Guijuelo](https://en.wikipedia.org/wiki/Guijuelo" \o "Guijuelo) ([Salamanca province](https://en.wikipedia.org/wiki/Salamanca_province))
* [Jamón](https://en.wikipedia.org/wiki/Jam%C3%B3n) from *Dehesa de Extremadura*, from [Extremadura](https://en.wikipedia.org/wiki/Extremadura)

**United Kingdom**

* [Wiltshire cure](https://en.wikipedia.org/wiki/Wiltshire_cure) ham[[22]](https://en.wikipedia.org/wiki/Ham#cite_note-AtlasBC-22)
* [York ham](https://en.wikipedia.org/wiki/York_ham) – [York](https://en.wikipedia.org/wiki/York)[[23]](https://en.wikipedia.org/wiki/Ham#cite_note-23)[[24]](https://en.wikipedia.org/wiki/Ham#cite_note-24)

**United States**

* [Smithfield ham](https://en.wikipedia.org/wiki/Smithfield_ham) – [Smithfield, Virginia](https://en.wikipedia.org/wiki/Smithfield,_Virginia)

Uses[[edit](https://en.wikipedia.org/w/index.php?title=Ham&action=edit&section=8" \o "Edit section: Uses)]

[](https://en.wikipedia.org/wiki/File:850_food.JPG)

A platter of ham and cheese sliced for sandwiches

Ham is typically used in its sliced form, often as a filling for sandwiches and similar foods, such as in the [ham sandwich](https://en.wikipedia.org/wiki/Ham_sandwich) and [ham and cheese sandwich](https://en.wikipedia.org/wiki/Ham_and_cheese_sandwich). Other variations include toasted sandwiches such as the [croque-monsieur](https://en.wikipedia.org/wiki/Croque-monsieur" \o "Croque-monsieur) and the [Cubano](https://en.wikipedia.org/wiki/Cuban_sandwich" \o "Cuban sandwich). It is also a popular topping for [pizza in the United States](https://en.wikipedia.org/wiki/Pizza_in_the_United_States).

In the United Kingdom, a pork leg cut, either whole or sliced, that has been cured but requires additional cooking is known as [gammon](https://en.wikipedia.org/wiki/Gammon_(meat)). Gammons were traditional cured before being cut from a side of pork along with [bacon](https://en.wikipedia.org/wiki/Bacon). When cooked, gammon is ham. Such roasts are a traditional part of British Christmas dinners.

Health effects[[edit](https://en.wikipedia.org/w/index.php?title=Ham&action=edit&section=9)]

As a processed meat, there has been concern over the health effects of ham consumption.[[25]](https://en.wikipedia.org/wiki/Ham#cite_note-25) A meta-analysis study from 2012 has shown a statistically relevant correlation between processed meat consumption and the risk of [pancreatic cancer](https://en.wikipedia.org/wiki/Pancreatic_cancer), with an increase in consumption of 50 grams (1.8 oz) per day leading to a 19% increase in risk.[[26]](https://en.wikipedia.org/wiki/Ham#cite_note-26)

This supported earlier studies, including the 2007 study [*Food, Nutrition, Physical Activity and the Prevention of Cancer: a Global Perspective*](https://en.wikipedia.org/wiki/Food,_Nutrition,_Physical_Activity_and_the_Prevention_of_Cancer:_a_Global_Perspective), by the [World Cancer Research Fund](https://en.wikipedia.org/wiki/World_Cancer_Research_Fund)and the [American Institute for Cancer Research](https://en.wikipedia.org/wiki/American_Institute_for_Cancer_Research),[[27]](https://en.wikipedia.org/wiki/Ham#cite_note-27) which reviewed more than 7,000 studies published worldwide.[[28]](https://en.wikipedia.org/wiki/Ham#cite_note-latimes_cancer-28) Among the recommendations was that, except for very rare occasions, people should avoid eating ham or other processed meats – cured, smoked, salted or chemically preserved meat products such as bacon, hot dogs, sausage,[[29]](https://en.wikipedia.org/wiki/Ham#cite_note-29)salami,[[30]](https://en.wikipedia.org/wiki/Ham#cite_note-30) and pastrami. The report states that once an individual reaches the 510 grams (18 oz) weekly limit for red meat, every 48 grams (1.7 oz) of processed meat consumed a day increases cancer risk by 21%.[[28]](https://en.wikipedia.org/wiki/Ham#cite_note-latimes_cancer-28)

A European [cohort study](https://en.wikipedia.org/wiki/Cohort_(statistics)) from 2013 also positively correlated processed meat consumption with higher all-cause mortality, with an estimation that 3.3% of the deaths amongst participants could have been prevented by consuming less than 20 grams (0.71 oz) of processed meat per day.[[*clarify*](https://en.wikipedia.org/wiki/Wikipedia:Please_clarify)][[31]](https://en.wikipedia.org/wiki/Ham#cite_note-31)