

**Cured meat****Feet in the trough**

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**The oldest method of preservation, and the best**

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CATO the Elder may have served Rome as *quaestor*, *aedile*, *praetor* and *consul*, but he came from an ancient plebeian family in the Sabine region. His ancestors were called Porcius, and his only complete surviving work, "De Agricultura", is a farming manual in which he pays tribute to his family origins with this recipe: "After buying legs of pork, cut off the feet. One-half peck ground Roman salt per ham. Spread the salt in the base of a vat or jar, then place a ham with the skin facing downwards. Cover completely with salt. After standing in salt for five days, take all hams out with the salt. Put those that were above below, and so rearrange and replace. After a total of 12 days take out the hams, clean off the salt and hang in the fresh air for two days. On the third day take down, rub all over with oil, hang in smoke for two days...take down, rub all over with a mixture of oil and vinegar and hang in the meat store. Neither moths nor worms will attack it."



This may be an attempt to replicate the flavour of the hams smoked over juniper and beech that Roman gourmets imported from Germania, says Mark Kurlansky in his book "Salt". Though Cato's recipe is among the first, the technique of salting and drying meat predates the Romans (who may have learnt it from the Gauls and Celts), and existed in cultures in the Far East who had no direct contact with Rome. Tracing the history of this method of preservation means tracing the history of man as a carnivore once he had graduated from living hand-to-mouth. Today—at least in rich countries, where refrigerators and supermarkets are ubiquitous—the need for these methods of preservation has faded. Also arrayed against this venerable culinary tradition are bureaucrats who see salmonella and botulism spreading everywhere; growing concern about eating too much fat and salt; and the industrialisation of the meat

industry, whose ersatz sausages and hams can be sold more cheaply than the real thing. Yet the taste remains.

Given the simplicity of the ingredients—meat, salt, air and time, with smoke, seasonings and water as optional extras—it is not surprising that the art of salting and curing was perfected in many cultures long before the chemical rationale for it was discovered. Briefly, salting preserves animal proteins by inhibiting microbial growth; it does this by dehydrating both the flesh itself and cells in the moulds and bacteria that feed on it, either ending or drastically slowing their growth, which unchecked would cause the meat to spoil.

Salt can be rubbed into the meat, as advised by Cato, or the meat can be submerged in a brine in which the salt has been dissolved. Brined or pickled meat often has to be cooked or soaked, because wet cures permeate the flesh more thoroughly and the meat would otherwise be too salty to eat. The meat is then hung up to dry, either in fresh air or in smoke, which is itself a complex material made up of hundreds of components, including carcinogens, which inhibit microbial growth; phenolics, which retard fat oxidation; and an array of sugars, acids and particulates that colour and flavour the meat. Unfortunately what is bad for microbes can be harmful to humans too: excessive consumption of smoked and cured meats has been linked to several types of cancer, though unconscionable amounts would have to be eaten to pose much of a risk.

Traditionally, western Europeans smoked meat over alderwood, though oak and beech are becoming more prevalent. North Americans tend to use hickory, mesquite, pecan, apple or cherry. Woods with heavy concentrations of resin, such as pine and fir, are unsuitable for smoking, because the resin tends to flare and produce too much soot and tar.

There also is a distinction between hot-smoking, in which meat is, in effect, cooked in a smoky oven, and cold-smoking, in which salted or brined meat is exposed to smoke but not heat. In hot-smoking, the muscle's filament proteins uncoil and coagulate; in cold-smoking they remain coiled but microbe-free. Thus a hot-smoked leg of pork is, like roast pork, a knife-and-fork food. Cut thinly and with the grain, a salted, cold-smoked leg of pork—such as western Europe's *prosciutto*, *jambon cru*, *jamón* or *Schinken*, Appalachian America's country ham or China's Yunnan ham—retains the silky texture of the raw meat. Heat transforms; salt, smoke and wind preserve.

## **Travellers' fare**

These hams were the food of settled communities: a pig's leg weighs at least 15lb (7kg). Travellers' salted meats were altogether more basic. The English word "jerky" for dried meat is derived from the Quechua word *charqui*, and archaeological evidence shows that the Incans sliced and salted meat surplus to requirements, then left it to dry in the wind and sun. The cowboys of America's Wild West did much the same. In the sun fresh meat could take a full day to dry out; today the sliced, spiced, brined meat rolls on nylon screens through a drying oven with fans and exhaust pipes to draw out moisture, reducing the drying time to a few hours. And if only a few years ago jerky seemed an old-fashioned kind of food, the carniphilia inspired by the Atkins diet has given it a new life.

Ships sailed from European ports with casks full of salt pork. Cut from the fatty belly of a pig, like bacon, salt pork requires blanching to render it edible. Salted for a fortnight, it could last for two years in a cold climate. Today cooks use it mainly for flavouring: we still have a taste for it, and although fatback or salted hock could substitute for it in most recipes, there is something pleasantly archaic about it—even if it was formerly a byword for deprivation at sea, rather like scurvy. Listen in on the reunion between two former shipmates—a wealthy reformed criminal and a poor, bitter shipmate—in the Sherlock Holmes thriller “The Gloria Scott”: “Why, it’s 30 year and more since I saw you last,” sneers Hudson, the mate, strolling onto the expansive estate of his old rival. “Here you are in your house, and me still picking my salt meat out of the harness cask.”

Hudson could well have been eating salt meat while fishing for something else to salt: cod, which fuelled the economies and the maritime explorations of much of northern Europe between the 15th and 19th centuries. Although Norwegian sailors caught cod off their coast as early as the 10th century, it was not until 1497, when John Cabot discovered Newfoundland and the seemingly inexhaustible fish stocks around its banks, that salt cod became an important cash crop. The Portuguese, who had been selling salt to Scandinavia since the 12th century, quickly set up cod-fishing outposts in Newfoundland, and salt cod became deeply ingrained in Iberian culinary culture (both Spanish and Portuguese use the same word for “cod” and “salt cod”: *bacalao* and *bacalhau*, respectively). Spain and Portugal, which remained Catholic as the Nordic countries turned Lutheran, needed fish for Fridays and fasting days, and salt cod travelled well, even to Iberia’s mountainous and inaccessible interior. Cod stocks in the north-west Atlantic have fallen by 96% in the past 150 years, causing the price to jump and consumption to drop, but the Portuguese still refer to it as *fiel amigo* (faithful friend). A famous Portuguese cookbook of the early 20th century contains 365 salt-cod recipes, one for every day of the year.

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Preserving fish works on the same principle as preserving pigs. The cod are gutted, heavily salted and packed in barrels. As the salt leaches the water from the fish, they sit in a self-created brine, then are hung up to dry.

Smoked salted salmon, called *lox* in Yiddish, was as central to the eastern European Jewish diet as cod was to the Portuguese, and for many of the same reasons: its abundance in German waters made it cheap; salting made it transportable to inland regions; and fish’s neutral status in Jewish dietary laws meant the faithful did not have to worry about how and by whom it was killed and prepared.



**Made of pork, salt, air and time**

Except for some factory-produced smoked meats, most of which are also cooked for extra safety and durability, curing and smoking methods for meat and fish remain largely unchanged. Sailors who brought salt from the Adriatic Sea and up the Po river to Parma in the eighth century would be paid either in money or in ham. Parma remains the world’s most famous producer of

cured hams, thanks to a strong agricultural tradition, pigs that become fat and tasty on a diet of cheese rinds (Parma's local cheese, Parmesan, is just as renowned as its ham), and a choice location in the Po Valley, with the temperate climate and consistent dry winds that are ideal for air-drying meat.

The artisans themselves also continue to use the same methods they have always used. At some point after the second world war, as food production across Europe became industrialised, making hams in the traditional labour-intensive manner ceased to be a necessary way of life and became a wonderfully tasty two-finger salute to all the boiled, pink, anaemic, mealy, tasteless hams sitting on supermarket shelves and in refrigerated cabinets.

Curing meat celebrates heterogeneity like no other culinary process. McDonald's manages to make hamburgers that taste the same from Cape Town to Novosibirsk; cured meats, with almost identical ingredients from region to region, taste wildly different. Italy produces six *denominazione di origine controllata* varieties of *prosciutto*, all of which are made from the whole leg of a pig, salt and perhaps a bit of sugar or spice. But by virtue of the airborne yeasts and moulds native to the particular region, variations in humidity, temperature and air quality, the diet and care of the pigs and the storage of the resulting hams, each of them tastes and feels quite different from the rest. The only other product for human consumption that varies so greatly from one area to another is whisky, which also relies on tradition, fanatical attention to detail and environmental alchemy. Just as Suntory can buy all the disused stills it wants, mimic the chemical and mineral composition of Scottish water and still produce something completely different from a Highland single malt, so a *prosciutto* from Parma will be softer, pinker and milder than a *prosciutto* from Modena, and a Lyonnais *saucisson* will have a tang that a *salame Piacentino* lacks.

Dry-curing sausages, however, as opposed to whole hams, introduces another element beyond desiccation: fermentation. The interior of a raw ham, having never been exposed to the air, remains relatively sterile; sausages, which are composed of ground (and therefore aerated) meat, along with added fat and seasonings, require an acid to kill bacteria from the inside out, and salt that dries microbes from the outside in. Dried air-cured sausages have as venerable a pedigree as *prosciutti*: the Romans learned the craft from the Lucanians, a tribe in what today is Basilicata, in southern Italy. The tribe's name persists in dry-cured sausages across the Mediterranean: the Greek *loukanika*, Spanish *longaniza*, Italian *luganega* and Portuguese *linguica*.

The traditional acid of choice is wine, though many sausage-makers today use a dried, powdered strain of lactic-acid-producing bacteria that kill listeria and other nasty bugs. As they multiply, these bacteria produce sodium nitrite, which protects against botulism, a lethal form of food poisoning whose name derives from the Latin word for sausage (*botulus*). They also inhibit mould growth on the inside of a sausage, but allow beneficial and tenderising white mould to grow on the outside.

Still, both types of mould—as well as a whole host of bacteria, both harmful and helpful—are present in the air, and figuring out how to court one and kill the other is a matter of experience and careful attention. In the 15th century Bartolomeo Sacchi, a writer from the Po Valley town of Cremona, suggested testing the quality of a ham thus: “Stick a knife into the middle of a ham and smell it. If it smells good, the ham will be good; if bad, it should be thrown away.”

The smell-test remains standard and reliable practice, both for whole-muscle cuts such as *prosciutto* and for dry-cured sausages such as traditionally made salami or *saucisson*. A trained nose can tell the difference between the funky, vegetal smell of healthy curing or fermentation and the rotting stink of decay and spoilage, just as a trained eye can tell the difference between the healthy white mould on the exterior of a sausage, which protects it from bacterial contamination and tenderises the meat, and the furry blue moulds that can grow inside the casing and spoil the sausage.

But a trained nose is an expensive one, and one whose perceptions do not easily translate into the language of “kill stages” and “hazard analysis and critical control points” spoken by inspectors in food-safety agencies. Michael Ruhlman, an American author of an excellent book on home curing, complains that “the problem is the government has no real knowledge of how this works.” This is because agricultural departments were created, in large measure, to oversee industrial-sized concerns, whereas meat-curing, which depends on individual expertise, is necessarily done on a smaller scale.

## **The wrong cure**

Over the past century or so, as food production in the West, but particularly in Britain and America, has become more industrialised and the population has become more urban, cured and dried products have become scarcer. The salami or *chorizo* you buy in a supermarket will probably have been cooked or irradiated rather than cured, which is a less foolproof method of killing pathogens. Other reasons for the decline in proper meat-curing include the disappearance of the neighbourhood butcher; the downward trend in meat consumption; and, in the United States, the assimilation of the European immigrants who originally brought their sausage-making traditions with them—particularly the Italians, but also the Hungarians, Polish and Portuguese.

Americans with a taste for imported sausages cannot easily indulge it. Anyone wanting to export cured meat to the United States must have a representative from the United States Department of Agriculture at the site of production and must follow the same stringent procedures that have been felling American sausage-makers. Producers must keep voluminous logs on everything from the temperature of the storage room—measured and recorded every four hours—to the meat products' pH level, the proportion of water in dry-cured sausages and the cleanliness of their employees' shoes and clothing.

*Jamón ibérico*—without question the most glorious use to which a pig can be put on this planet—has not been legally available in the United States until now, but will become so from 2007 because the Department of Agriculture has at long last decided that the methods used by Spanish artisans for millennia are unlikely to poison American citizens. Stealthy Americans have always stowed sausages in their luggage when returning from European holidays, but customs inspections are surprisingly frequent and intrusive. Confiscated products are usually eaten, as they should be: your correspondent, returning to Washington from southern France, tried to hide a couple of *saucissons de Lyon* in his luggage, which made a policeman's German shepherd dog very happy.



Whatever one may think of the benefits or detriments of agricultural and culinary industrialisation, it seems clear that it has contributed a lot of dull-tasting products. Given a choice, eaters vote with their palate: there really is no comparison between an artisan-made sausage pulled down from a butcher's ceiling and a shrink-wrapped salami on a supermarket shelf. The proper stuff is gaining ground, but it has become a luxury item, appealing to taste and refinement rather than convenience or economy.

Paul Bertolli, the grandson of an Italian butcher, used to run Chez Panisse, one of America's most celebrated restaurants. In March he threw in his chef's whites to start a business making hand-crafted, dry-cured sausages. He now goes through 35,000lb of pork a month, producing beautiful sausages that rival anything found from Italy's thigh to its toe. Having studied with the itinerant Tuscan sausage-makers, the *norcinos*, he realised he could replicate their art in California's East Bay, which has a similar climate. The success of an annual "nose-to-tail" dinner he held at his restaurant, featuring plenty of his home-cured products, persuaded him that "there might be a real void in the market for these products I loved as a kid," he explains. "The traditions were sort of getting lost under Department of Agriculture regulations."

Bertolli, like other romantics that transform raw flesh into something melting and rich with little more than salt, air and time, do not follow tradition for its own sake, but because it produces something extraordinarily delicious. And that tradition, like the meat it produces, is something that neither moths nor worms can spoil.