Garum and a dish of anchovies from which it is made —Civil/Shutterstock

CUT THE MUSTARD

Flavor archeology, from fish sauce to ketchup

THE OLDEST KNOWN written recipes were etched into clay tablets nearly 3,800 years ago from the Old Babylonian Period in Mesopotamia. One is for a lamb stew, and reads, roughly, "Heat water with the fat from a sheep's tail. Add leg of mutton and cook with salt, wild licorice, juniper berries, onions, and garlic, red beets, semolina flour, cumin, and coriander. Serve with a garnish of coriander seeds, cilantro, and scallions." Other recipes have been found amid the same larger collection of 40,000 ancient cuneiform tablets and cylinder seals, acquired from southern Iraq in the nineteenth and twentieth centuries, which can be found on the shelves of Yale University's Babylonian Collection.

One tablet, called YPM BC 018709, dating to 1900–1600 BCE, was studied in the 1940s and 1950s by the Assyriologist Mary Inda Hussey (1876–1952), who taught at Wellesley and Mt. Holyoke College. Hussey realized the tablet contained several recipes for preparing food for rituals. Directives include cooking birds in a pastry crust. Flavorings range from vinegar and mint to cilantro and beer bread. A few recipes are identified as foreign cuisine, such as the "Elamite stew" from a region to the southeast of Mesopotamia, in modern Iran. Several recipes call for *šiqqu*, a fermented sauce made of bony fish, shellfish, and sometimes even grasshoppers.

Ancient Mesopotamian, Egyptian Greek, and Roman cooks used fermented fish sauce along with basil, cinnamon, cilantro, coriander, cumin, garlic, ginger, mint, mustard seed, oregano, parsley, black pepper, marjoram, saffron, and more. Although exact dates of introduction of these flavors remain unknown, spices and condiments were undoubtedly added to food long before the domestication of plants and animals began. In fact, there is evidence that seasonings preceded plant domestication by many thousands of years. Recently, archaeologists have identified mustard seeds associated with cooked vegetables—wild pulses, edible seeds of legumes—at the site of Shanidar Cave in Iraq, in deposits dating to about 40,000 years ago.

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Archaeologists have always been interested in the origins of staple crops like wheat, rice, corn, and millet, but they have not paid as much attention to flavorings. They have found that people independently domesticated staple crops in as many as ten separate centers of innovation. Decades of research have steadily pushed back the dates for plant domestication to about 10,000 years ago, soon after the end of the last ice age. Around that time, at the site of Spirit Cave in Thailand, archeological remains point to ancient cooks having used black pepper, almonds, bottle gourds, water chestnuts, peas, broad beans, cucumber, and the stimulant betel. Most of these plants showed little signs of domestication.

Spices were among the first things people traded long distances. Ginger, black pepper, cloves, cinnamon, all plants of south and southeast Asia, were traded into Mesopotamian, Egyptian, Persian, and Greek kitchens, carried overland or across the Indian Ocean. Many were quite expensive. Pliny the Elder (23–79 CE) comments on the spice trade in his book *Natural History*:

> It is quite surprising that the use of pepper has come so much into fashion . . . Pepper has nothing in it that can plead as a recommendation to either fruit or berry, its only desirable quality being a certain pungency; and yet it is for this that we import it all the way from India! Who was the first to try it as an article of food? Who in his greed for an appetite was not content merely to be hungry? Both pepper and ginger grow wild in their own countries, and nevertheless they are bought by weight like gold and silver.

Oldest known written recipes written in cuneiform on a 3,725-year-old tablet —Yale Babylonian Collection YPM BC 018709

BEYOND DRY SPICES, condiments that were liquids or pastes also appeared very early—as soon as there were containers to hold them—in many places around the world. Fermented sauces seem to occur many thousands of years BCE, co-occurring with the knowledge of fermentation that produced wine, beer, and vinegar, dating back more than 10,000 years. Sometime before written records began, a brave chef took leftover fish parts, including the heads and guts, and allowed them to ferment in a vat for months. Mashing the powerfully fragrant results with salt and perhaps other flavoring agents, the resulting fluid became the ancient predecessor of modern fish sauces—a staple in most East and Southeast Asian cookery (such as Vietnamese nuoc mam). Fish sauces were used in the Zhou Dynasty (1046–256 BCE) and maybe much earlier. Fermented fish sauces have remarkable culinary

Mosaic of a fish sauce vessel from Pompeii, from around 30 CE. The inscription reads, "from the workshop of the garum importer Aulus Umbricius Scaurus." Pompeiian merchants also made kosher garum for the Jewish population. Scaurus probably died in the eruption of Mt. Vesuvius in 79 CE, along with Pliny the Elder. —Wikipedia Commons

properties, adding a deep umami flavor to savory dishes. Anchovy paste, soy sauce, and much later tomato paste can also provide chefs with this umami richness.

In the Classical world, fish sauce was known by the Greek term "garum," named for the small fish used to make it. The Romans used the same name. As Pliny the Elder described in *Natural History*, it consisted "of the guts of fish and the other parts that would otherwise be considered refuse; these are soaked in salt, so that garum is really liquor from the putrefaction of these matters." Another early account describes the fermentation of large quantities of small fish in terracotta jars, where "their inward parts melt and issue forth as a stream of decomposition." The Romans called this thinner fish sauce "liquamen." Garum was the most popular condiment in the Roman Empire, the equivalent of ketchup in the U.S. Facilities for fermenting fish sauce have been found all over the Roman empire, including northwest Spain. At one Spanish site, Paula Campos and her colleagues at the University of Porto in Portugal recently reconstructed the complete genome from the fishbone: they were European sardines, probably from the Atlantic.

Not everyone loved it. In his letters outlining the Stoic philosophy to a correspondent in Sicily, Seneca the Younger (ca. 4 BCE–65 CE) said, "Do you not realize that *garum sociorum*, that expensive bloody mass of decayed fish, consumes the stomach with its salted putrefaction?" Seneca wrote these letters in the last years of his life, and was not the sort of person you would want reviewing your restaurant. In promoting his philosophy of frugal, non-hedonistic living, he also called oysters "sluggish food fattened on slime", and mushrooms "the epicure's poison." (Recent research, in fact, shows that fermented fish sauce promotes and supports a heathy gut biome.)

Fish sauce never completely disappeared from European cuisines between Roman times and today, but through the Middle Ages it remained on the coastal fringes of Europe. Stimulated by the newly growing trade with Asia, fish sauces became common again in European documents in the 1600s, associated with a new word in Europe: "cat-chup." A 1698 lexicon of sailors' terminology titled, "New Dictionary of the Terms Ancient and Modern of the Canting Crew," defined it simply as a "high East-India sauce." The word comes from the Hokkien language of southeast China where it is rendered as *kôe-chiap* or *kê-chiap.* The British merchant Charles Lockyer (ca. 1685–1752) traveled along the coast of China, Vietnam, Malaysia, Indonesia, and India, looking for things to import to Europe; in 1711 he published *"An Account of the Trade in India."* He wrote, "Soy comes in Tubs from Jappan, and the best Ketchup from Tonqueen [northern Vietnam]; yet good of both sorts, are made and sold very cheap in China . . . I know not a more profitable Commodity." These sauces made their way to Europe and joined the dinner table with malt vinegars and other sauces. Louis the XIV reportedly served Asian soy sauce at the court at Versailles.

There is a very fishy ketchup recipe in Eliza Smith 's 1727 book, *The Compleat Housewife; or, Accomplished Gentlewoman's Companion,"* and another version is in a 1748 book by Hannah Glasse (1708–1770), *Cooking Made Plain and Easy.* Glasse's book says:

> To Make KATCH-UP that will keep good Twenty Years. Take a Gallon of strong stale Beer, one Pound of Anchovies wash'd and clean'd from the Guts, half an Ounce of Mace, half an Ounce of Cloves, a quarter of an Ounce of Pepper, three large Races of Ginger, one Pound of Eschallots, and one Quart of flap Mushrooms

The range of herbs and spices known to ancient Mesopotamian, Egyptian, Greek, and Roman cooks is not very different from what can be found in a western spice rack today. Among other plants and powders, classical cooks used basil, cinnamon, cilantro, coriander, cumin, garlic, ginger, mint, mustard seed, oregano, parsley, black pepper, marjoram, saffron, vinegars, and fermented fish sauce. —New Africa/Shutterstock

> well rubb'd and pick'd; boil all these over a slow Fire till it is half wasted, and strain it thro' a Flannel Bag; let it stand till it is quite cold, then bottle and stop it very close.

FOR AN AMERICAN PALATE, the most popular descendent of fish sauce is indeed ketchup. Tomatoes (or "love apples") were originally domesticated in the Andes Mountains of South America about 7,000 years ago, and began to appear as a constituent of the sauce in the early 1800s. The 1817 cookbook of William Kitchiner (1778–1827)'s 1817 *Apicius Redivivus; or, the Cook's Oracle*, had a ketchup recipe that called for both tomatoes and anchovies. Other versions were spiced up with chili peppers. Through the 1800s, vinegar and sugar begin to make up more and more of the sauce. Henry J. Heinz (1844–1919) began bottling a ketchup in the 1870s that left out fish entirely, instead beginning with a base of tomatoes, vinegar, brown sugar, and salt, and flavoring it with allspice, cinnamon, cloves, pepper, and some other seasonings. It is basically the same sauce today, with different U.S. and European versions (the European version has more tomatoes, less sugar and vinegar, and uses cane sugar instead of high-fructose corn syrup). According to the Heinz company, 97 percent of Americans have ketchup in their refrigerators, and Heinz alone sells the equivalent of almost three bottles per person per year.

The evolution of a recipe for ketchup (and with French fries for garnish) is just one example of the world-changing culinary explosion that took place after Europeans began to encounter the cultures of the Americas in the 1500s. The ensuing exchange allowed for the combination of vastly different sets of ingredients and flavorings. The long-distance flow of herbs and spices has been changing the world's cuisines all through history, and this fusion of different culinary traditions has enriched the world.

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