

Pemmican: An Ideal Trail Food

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ABSTRACT: Indigenous people across the globe have combined dried meat or fish and fat either as trail food or to store for later use. In North America, they often added sweet berries to create pemmican, a tasty portable food. Though its preparation was long and arduous, the result was nutritious, lightweight, and lasted for months. Pemmican, in its many forms, survives and thrives in today's fast-paced world of 'grab and go' meals.

“The pemmican, which is so useful, and in fact almost essential, to the travellers’
— George Back, Arctic Explorer ¹

Meat has always been part of human cuisines.² Indeed, the term ‘hunter-gatherer’ applies to all past societies before the emergence of food production, ten to twelve thousand years ago.³ When one or more animals were killed, everyone feasted on freshly-roasted flesh, while the excess was probably dried to preserve it for later use as a kind of ‘pantry staple’. Sometimes this dried meat would be mixed with fat and bone marrow, creating a tasty concoction that in North America came to be known as pemmican, a word taken from the Cree language.

The mixing of dried meat and fat is ancient and may have begun in the Lower Palaeolithic, some 400,000 years ago.⁴ The practice is worldwide, stretching from the sun-drenched plateaus of Central Asia to the grassy plains of North America, from Alaska’s frozen tundra to Patagonia’s lofty meadows and from the jerky-like bakkwa of China and Malaysia to the dried kilishi made by Hausa cooks in Nigeria and the kavurmeh (or kawurmeh) of central Africa.⁵ There are many variations of this iconic portable food among indigenous North American cultures, and it has also been used by polar explorers and the military. It is still popular among some groups today.

Salt and spices both help preserve and flavour the various recipes but, in practical terms, drying is what keeps the meat from being spoilt by bacteria.⁶ For example, a beef steak is about 70 percent water and has a limited ‘shelf life’ while dried beef, such as jerky, has less than 20 percent water and can be stored without refrigeration for a very long time. Being lighter, dried meat is also much easier for nomadic people or travellers to carry.⁷

While meat offers protein, the added bone marrow and fat provide additional, quickly available, energy. In hunted animals, marrow is the spongy tissue in large leg bones where both white and red blood cells are formed. In nutritional terms, marrow contains a high-quality fat plus valuable vitamins and minerals. For example, one tablespoon (14 grams) of raw caribou bone marrow provides 14 Calories (kcal) or 59 kilojoules of protein and 110 Calories or 460

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kilojoules of fat.⁸ This fat thus supplies about eight times more nutritional energy than protein, a crucial consideration under sometimes trying physical circumstances.

Eighteenth century armies also took advantage of the energy found in animal marrow. Judge John Joseph Henry's account of the failed attempt by Americans to capture Quebec City in December 1775, notes: 'We feasted till noon, and in the intermediate moments, culled the entrails for the fat: we even broke the bones, and extracted the marrow, under the full persuasion, that food of an oily nature, is one of strongest mainstays of human life'.⁹

Pemmican in Indigenous North America

The word pemmican is derived from the Cree, *pimîbkâ*, meaning 'manufactured grease'.¹⁰ Ingredients and recipes vary across the continent, depending upon the animals and plants available. For instance, some Arctic Canadian Inuit use seal meat.¹¹ For the Dene of subarctic Canada, it might be caribou, moose, rabbit, or fish.¹² Maryann Sam of the James Bay Cree, located at the southern end of Hudson Bay, asserts that powdered fish makes the best pemmican. The powder can be mixed like a batter with melted lard, or the fat of caribou, goose, or moose.¹³

Among the Minnesota Anishinaabe (Ojibwa) to the south, deer, moose, and bear were dried and eaten as jerky. Timothy Roufs relates the words of Gabe-bines, who tells us that he much preferred bear jerky:

I think they called it "jerk steak" in English because it was so dry you had to jerk it to take a bite off and eat it. My mother made jerk steak from deer and bear, but bear dried meat was the best meat we ever tasted.¹⁴

Along the Rainey River between Minnesota and northwestern Ontario, sturgeon was favoured.¹⁵

Pemmican across the Great Plains

Archaeological evidence of making bone grease, a key ingredient in the food, suggests pemmican was made on the Great Plains between five and six thousand years ago.¹⁶ A description of the bone grease-making is offered by Julia McDonald, a Vuntut Gwich'in resident of Old Crow Flats in the Canadian Yukon:

After the meat has been cut off, the bones are left for one day, which allows them to dry a little. If the bones were left for two or three days, the bone grease made from them would taste too strong to be pleasant. [...] The bones [...] are smashed into little pieces, "as big as finger nails," with the back of an axe. [...] The broken bones are then put in a kettle with a little cold water and placed on the fire.¹⁷

Pemmican has been made by southern tribes such as the Comanche (Nermernuh)¹⁸ and, in the north, by the Blackfoot of Alberta and Montana. Ethnographer Clark Wissler wrote of the Piegan Blackfoot group Piikáni:

While the Blackfoot had no cereal from which such bread substance could be made, they found a substitute in a compound of berries and

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flesh generally known as pemmican. For this, the best cuts of buffalo were dried in the usual manner. Then they were pounded on a stone until fine. [...] Just before pounding, the pieces of dried meat were held over the fire to make them soft and oily. Marrow and other fats were heated and mixed with the pounded meats, after which crushed wild cherries were worked into the mess.¹⁹

Reducing the meat to a powder and smashing the bones into small pieces must have demanded many hours of work. Food historian Rachel Laudan points out that ‘grinding and pounding are some of the heaviest tasks humans have ever undertaken’.²⁰

Pemmican Ingredients and Recipes

Recipes depend upon the available ingredients: type of meat, fat source, preferred spices, and a sweetener. One issue common to all, however, is what should be the ratio between meat and fat? Among the Anishinaabe (Chippewa) of Turtle Mountain, North Dakota, the ratio is five parts meat to four parts fat. The pemmican recipe prepared by the Sisseton-Wahpeton Oyate (Dakota) and analyzed at the University of South Dakota consisted of 7.4 parts fat to 12.7 parts protein. A popular website prefers 1:1, except in a hot climate where it suggests one part fat to two parts meat.²¹

Choice of sweetener is another major issue. Ripe berries and fruits may serve but, where it has become available, sugar is used. Among the Lakota, whose name for pemmican is *wasna*, four fruits were routinely added: juneberry (also known as saskatoon), wild plum, sand cherry, and chokecherry. Other wild fruits have been used elsewhere.²²

Energy from Pemmican

Carrying firewood back to camp, dragging a sled through the snow, or paddling a canoe for several hours—all demand energy. An active person, whether working or simply on the trail, needs copious amounts of it, expending upwards of 3,000 to 4,000 Calories (12,600 to 16,750 kilojoules) a day.²³ Where should this energy come from? Pemmican supplies calories from both fat and protein. Fat yields 9 Calories (37.7 kilojoules) per gram, protein only 4 Calories (16.7 kilojoules). Exercise physiologist Loren Cordain estimates that the typical pemmican recipe contained one part dried meat and one part fat. This works out to 73.7% of the energy from fat, and 26.3% from protein.²⁴ Cordain considers this nearly ideal. A calculation for the Turtle Mountain Anishinaabe recipe mentioned above produces 74% fat energy with 26% protein energy. The Sisseton-Wahpeton Oyate recipe yields only 57% fat. Proportions were probably altered, depending upon the pemmican’s intended use. Notably, health problems result if the proportions stray too far from Cordain’s ideal. Too much lean meat over more than a week leads to symptoms of starvation and eventual debilitation and death in what is called ‘protein poisoning’ or ‘rabbit starvation.’²⁵ Too much fat results in ketosis, the burning of stored body fat and weight loss.²⁶

Pemmican in Spiritual Life

Like many foods, pemmican became part of the people's spiritual life as Lois Frank notes in the introduction to *Foods of the Southwest Indian Nations*: 'The acts of hunting, growing, gathering, cooking, and eating take on a spiritual aspect akin to prayer'.²⁷ This sacredness extends to the added ingredients such as the berries. In the past, pemmican featured in religious rituals including the Lakota Ghost Keeper mortuary ceremony, the Blackfoot Horns Society and as a substitute for bread in the Christian sacrament of Holy Communion within the Red River region.²⁸ It also found its way into Indigenous stories.²⁹

The Fur Trade and Pemmican

By the early seventeenth century, most fur-bearing mammals in England and much of northern Europe had disappeared or become scarce because of over-trapping and habitat loss. Meanwhile, in England, the demand for fur was on the rise as beaver hats came into fashion.³⁰ In response, traders increasingly turned to North America where, a century or so earlier, explorers had described a wilderness teeming with beaver and other wildlife. Trade in furs had begun on the Atlantic coast in the fifteenth century and gradually moved inland, reaching the St. Lawrence River in what is now Québec by the early 1500s.³¹ As Europeans demanded more and more fur for hats, coats, jackets, capes, linings, muffs, boots, stoles, shawls, gloves, slippers, trimming, and other apparel, the pressure on the major trading companies to increase their supply led them to expand into the boreal forests of northern Alberta and British Columbia. Feeding their many traders and canoe men (voyageurs) became a serious problem since game in the north was scarce. Pemmican became the solution.

The demand for pemmican in northwestern Canada grew until its production and distribution became a major part of the trading efforts. During the 1860s, the Hudson's Bay Company needed over 90,000 kg (220,000 lbs) a year just to feed its boatmen.³² Much of this pemmican came from the prairies of southern Manitoba and Saskatchewan, produced by the Métis (people of mixed European-Native ancestry).³³

In his celebrated book, *Pemmican Empire*, George Colpitts detailed this episode of fur trade history. It is a sober tale about the near-extinction of bison, the fierce rivalry between two trading giants (the Hudson's Bay Company and the North West Company), the shifting status of Indigenous women, and the deadly smallpox outbreaks that killed over half the Native people of the northern plains.³⁴

Polar Explorers and the Military Use Pemmican

Polar lands, especially the Arctic, have attracted European explorers for centuries. Beginning with John Cabot in 1497 more than a dozen expeditions sought the fabled northwest passage to the Orient. Others ventured to Antarctica. Though spurred by commerce and national sovereignty, these adventurers followed their

passion and challenged themselves. The hardship and danger involved is almost unthinkable.

Compact and nutritious, pemmican became a mainstay of many expeditions. A list of explorers who have packed it on their journeys reads like a who's who—Perry, Amundsen, Scott, Shackleton, Nansen.³⁵ South Pole explorer Robert Scott summed up the experience of many: "There can be little question, therefore, that polar sledging runs an easy first as a hunger-producing employment".³⁶ That hunger was often satisfied by chewing on this potent mixture.³⁷ In a slight twist, the Danish army fed both men and dogs in their sledge patrols across Greenland what was called pemmican. It consisted of soya protein, pea flour, milk protein, vitamins, and minerals.³⁸

It has been said that armies travel on their stomachs and logistics demand lightweight and nutritious field rations. As a result, pemmican and jerked beef were common in military campaigns for several decades after the American Civil War.³⁹ However, experiences during World War II were mixed as variations on the Indigenous product were tried. In 1942, a test of dehydrated and compressed meat bars (essentially cold hamburgers) was abandoned when the food did not keep well.⁴⁰ After the war, another test fed an infantry platoon nothing but tea and pemmican. This trial was also abandoned when the men became 'listless with drawn faces and sunken eyes'.⁴¹ The men recovered after eating pemmican mixed with carbohydrates.

Pemmican Today

The traditional version of pemmican made with bison meat is still being produced and eaten by Indigenous groups across the plains. A leading commercial favourite is the Tanka Bar. The company's mix of bison meat and cranberries is a story of rocketing success followed by almost complete failure followed by a promising comeback.

Started in 2006 on the Pine Ridge Reservation in South Dakota, Tanka introduced the first meat and fruit bison bar with a plan to create a local product that would help ease the soaring local unemployment rate and also restore the bison's presence among the Oglala Lakota people at Pine Ridge. Over time, Tanka became a commercial success. Then a giant food company launched its own bison bar in 2018. The national publicity generated by that company increased demand for Tanka's product, but they could not scale up fast enough. Tanka almost went under as dozens of nimble competitors took over the market. In 2020, however, Tanka entered into collaboration with a network of independent family farmers and ranchers that enabled it to secure a supply of bison meat and operating capital that helped them address their production issues. Its future again looks bright as the top meat bar supplier.⁴²

Without a doubt, pemmican is one of the oldest and most widely eaten portable foods on the planet. While maintaining its historic roots and recipes, it has also evolved culturally to become a familiar part of today's world of portable food.

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Notes

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