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Journal of Biotechnology and Bioprocessing

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Review Article

Review of the Origins of Cooking and Food Preservation Methods

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Received date: July 12, 2021; **Accepted date:** August 09, 2021; **Published date:** August 13, 2021

Citation: Benjamin Ruiz Loyola (2021) Review of the Origins of Cooking and Food Preservation Methods *J, Biotechnology and Bioprocessing* 2(6); DOI: 10.31579/2766-2314/049

Abstract

A short story about the cooking and preservation of food allows us to remember some of the principal preservation methods currently in use, some of them since thousands of years ago. The importance of fire discovery is emphasized, not only as the cooking starter but also as part of the first preservation methods, as smoking and drying. The use of natural sources lead to new methods, as salting. Modern technologies were developed through time, making the food last longer in order to try to feed more than seven billion people on earth.

Key words: fire, cooking, packaging, refrigeration, freezing, jamming, pickling, salting, smoking, fermentation

Introduction

The man was still nomadic. That individual was looking for food when it started to rain lightly. The other members of his tribe were scattered, each procuring his own food.

Looking for a place to shelter from the drizzle, he spotted an apple tree; climbed to the lower branches and released a small one. He began to eat and suddenly heard dark noises; He turned back to the source of the noises and saw, with fear, that the great man-killer cat had caught a small monkey and was leading it to a neighboring tree. It could have been him! He trembled with fear, but that did not mean that he stopped eating. After the first apple he took another, to calm his hunger.

He was always dirty, although he did not know it and it was no wonder he felt sticky. He was used to his own smell of sweat, blood, dirt. The downside, and he felt it instinctively rather than real knowledge, was that the smell allowed potential victims to detect it early. Worse still, predators spotted it with some ease. Although to tell the truth, they all smelled the same way and it was even nice to know, by the smell, when there was company or danger.

He liked birds, especially those that did not fly very high and perched on the low branches of the trees, with their colorful plumage and their loud, happy and strident song. They gave a certain variety to his life and, besides everything, they were a new food, almost a delicacy when he managed to catch a young specimen, because the old ones had tough flesh and thick blood. Although he was forced to eat what he could find or catch.

In a neighboring tree were two of those multicolored birds and he was wondering how he could catch them, when a horrible thunder, accompanied by an intense light and a shudder in the air, caused him to fall from the tree. He heard first a very long scream and then a series of grunts of pain, fear, and bewilderment.

He saw the light behind him grow brighter and turned his head to see what had happened. Some of the branches were on fire, these were constantly increasing in size and intensifying the light; the heat increased, and a monkey and a bird were in the middle of the fire.

He was afraid because he had never seen anything like it and thought about fleeing, but he remembered that the man-killer was around and decided to stay. Besides, it was still raining. He was shivering with fear and cold, not understanding what had happened and the possibility that the man-killer would catch him, but his curiosity overcame his fears.

Suddenly, the rain got worse and the fire was gradually extinguished. He saw smoke rising from the dead branches and was intrigued. He managed to perceive a strange smell, different from the ones he was used to, felt a strange burning in his throat and had a fit of coughing. Still curiosity overcame his fear and he slowly approached the shattered tree. Small flames were visible and he slowly brought his hand closer to them.

At first he felt heat but then it turned into intense pain. The hairs on the back of his hand charred as he removed it from the fire. The bad smell coming from the burned tree, or at least a part of it, was identical to that generated by his burned hairs. He screamed and grunted, in surprise and annoyance from the burn, which fortunately was not very intense. He saw

that some of the apples on this tree had changed color, he took one and bit it in fear. He found it smoother, with a different texture and flavor. Tasty!

He noticed that the bird and the monkey were among the remains of the burned branches, and carefully so as not to get another surprise, he reached out to touch the animals. They did not move and then it was for them. He watched them as he touched them.

The plumage of the bird was all changed, without colors and when pulled, many of the feathers came off easily and almost no blood dripped when pulled out. The flesh felt softer and tasted it. It was easier for him to chew and the taste ... the taste! It was totally different! He ripped off one leg and ate it almost at one go. When he finished with the leg he thought about eating another part of the bird, but his eyes went to the monkey. He pulled it towards him and noticed that his skin was almost hairless and the ones that were left almost fell off on their own.

He yanked on one arm a couple of times, peeling off the charred skin. It didn't taste bad. He ripped off some of the skinned meat and ate it. It was also softer and almost bloodless. And again, the difference was in the taste.

He loaded up the corpses and excitedly carried them away to share his discovery with the group. Gone was part of the apples that he was thinking of taking with him, he completely forgot about them because of the discovery he had just made: that intense light, which caused pain if you touched it, the fire, changed the texture and flavor of the food. In a fortuitous and fortuitous moment, this primitive man learned that meat can be cooked and tastes better. He knew that this inexplicable phenomenon, which caused him fear from the noise and pain from the burn, could give a new flavor and a new texture to the food. We do not know if he was able to share the whole experience with his group mates, but we assume that he did. By accident he became the first chef in history. And perhaps he also established himself as the first firefighter, at least because he realized that the rainwater had put out the fire.

Food preservation

Once our old ancestor learned to cook food, even if it was rudimentary, he began to think of different ways of cooking to diversify the taste of food. He was able to cook the meat directly on the fire, indirectly by placing it on the fire, but not directly in contact with it and managed to develop rudimentary ovens in which it was cooked with heat but without contact between the fire and the meat.

He began to experiment with mixing foods: roots, meat, fruits, vegetables. He learned early that herbs could change the taste of food cooked with fire; we suppose that, in some fortuitous way, Gu (as they called him in the tribe) put pieces of meat in contact with papaya seeds and found that the latter became softer. However, he ran into a problem: meat that is treated this way takes much less time to decompose, so it must be eaten quickly. This was a supply problem, because at that time there were no markets to go to. So even if the taste was completely pleasant, you shouldn't mix the meat with papaya.

When he discovered salt, things changed a lot. Possibly Gu was fishing on the beach and the fish he caught were cooked directly and tasted better than the meat of land animals. One day he went to the sea to help himself remove the skin of an animal to cook it and it occurred to him to wash it in sea water to remove traces of blood from the meat, which inadvertently became impregnated with salt, which modified the taste: the meat was seasoned and its flavor was enriched.

He found that if seawater is left stagnant, the water evaporates and the salt becomes concentrated, so he was able to take it with him to improve his food. At the same time, he came across a very interesting novelty. On one occasion, he impregnated chunks of meat with a lot of salt and left it in the sun while he tried to light a fire for cooking. Something happened that forgot the fire and the meat and, miraculously, no one touched it. A few days later, he returned to the place and found the salty and sunny meat, strange-looking, dry, not at all appetizing, unlike anything he had known about meat until that moment. He tasted it and, despite its harshness, the salty taste pleased him. They took that meat to share it with the group and thus they found something new: the meat could be preserved for a longer time without decomposing, which could allow them to remain in a pleasant place for a longer time, when having food; moreover, they would have meat even in times of scarcity, such as in very harsh winters. Thus began his journey through the paths of food preservation.

On another occasion he hung his meat between two branches while lighting the fire, which was being difficult because the wood was damp. All it did was produce an immense smoke that made him gasp for air. He spent more than ten hours trying and in the end he gave up and went to rest, but he left the fire without completely extinguishing, so it continued to generate smoke, which directly passed through the meat. He knew that if the smoke surrounded the meat the flies would not come near and it would be cleaner, but what he found the next day was a meat with a somewhat salty taste, not completely dry, a little darker in color, with an exquisite taste. Suddenly he already had two systems for preserving meat: salting and smoking.

Currently there are meat products that continue to use one of these two preservation methods: salting and smoking. Salt, by penetrating the food, prevents the growth of bacteria that cause spoilage. The smoke has bactericidal properties, it eliminates most of the microorganisms that intervene in the decomposition of the meat. Many producers use flavorings that resemble smoke, but without taking advantage of its properties. But smoked ham is an example of the technique described here, just as jerky and jerky are examples of salty. Serrano ham and prosciutto are examples of the combination of the two techniques. The pork leg is salted and left hanging to drain all the blood, then the excess is washed and smoked using different types of wood to give a special flavor to each product, according to the producer. After smoking, which can last up to two months, it is left in the air at room temperature or controlled below 20°C for up to months, before being released for sale.

Then, after the accidental emergence of food cooking processes, with the discovery of fire, the first methods of food preservation were randomly presented. We believe that this contributed, together with the development of agriculture, to the primitive man becoming sedentary.

Food preservation is of paramount importance in order to provide food for the more than 7,600,000,000 inhabitants that currently populate the world.

Some of the preservation methods in brief

Pickling. It is generally used for vegetables. Take advantage of the properties of vinegar to increase the shelf life of products made in this way. Something very common in Mexico is pickled chili peppers. This method also makes use of the capacity of heat to preserve food.

Jellying and jamming. It consists of mixing the food to be preserved with an excess of sugar or honey; This excess inhibits the growth of microorganisms and allowed (continues to do so) to dispose of these fruits even when they are not harvested.

Refrigeration. It keeps food at temperatures close to 4°C, which greatly reduces decomposition processes.

Freezing. It consists of putting the food at temperatures below 0 ° C, whereby the water crystallizes, the microorganisms are inactivated, and the enzymatic decomposition reactions become extremely slow.

Drying. As much water as possible is removed, preventing the growth of microorganisms.

Canning. It consists of keeping hot food in a hot can (generally between 00 ° C and 50 ° C), which allows the can to be sterilized during the process. Once closed, it is reheated to ensure proper sterilization of the food. As it cools, the water vapor inside the container condenses and becomes a vacuum inside the container. As the amount of oxygen present is reduced, decomposition processes do too. If you use a bottle instead of a can, it is named **bottling**.

Packaging. There are two main packaging processes, as follows.

Vacuum packed. Generally, cold food is introduced into the package and as much air as possible is removed to increase the shelf life of the food.

Controlled packaging or modified atmosphere packaging (MAP). Food can be packaged by replacing normal air with carbon dioxide or nitrogen, so that in the absence of oxygen, the chemical oxidation processes stop and the proliferation of microorganisms that require normal air to survive also does so. In this way, the shelf life of the food is significantly increased.

Pasteurization. It consists of subjecting the food to a high temperature for a short time, which eliminates the microorganisms. There are some variants of the process:

HTST (it means high temperature and short time). The food is kept at medium temperature for a relatively short time (for example, milk is kept between 60°C and 70°C for about 30 minutes and then quickly brought to 4°C).

UHT (it means ultra-high temperature). The food is kept at a high temperature for a short time (for example, milk is kept at around 138°C for about two seconds and then brought to room temperature.

Fermentation. Wheat and other cereals have been preserved since ancient times by alcoholic fermentation, which generates beer. Indeed, the production of beer is a very old method of preserved cereals. The use of yeast to make bread is another good example.

Radiation. Different types of electromagnetic radiation are used, from a small dose of rays to high intensity laser rays, through ultraviolet radiation or ultrasound. In all cases, what is intended (and achieved) is to eliminate microorganisms present in the food, either before or after packaging.

High hydrostatic pressure. It consists of treating fresh food with a stream of water at a high pressure, thereby affecting cell structures and some sensitive proteins, resulting in the elimination of a large part of the bacteria present, as well as significantly limiting the development of those that managed to resist the treatment intact.

Electromagnetic pulse or electric field pulse. It consists of placing the food between two electrodes and generating an electric field between them, for a very short period of time (pulse), repeating the exposure to the field several times. It is not a continuous electric field but an interrupted one, which is why it is called a pulse, like heart beats.

Conclusions

Our old friend from the beginning of this story could easily have received a prehistoric Nobel Prize, if they had existed. We can think of several endings for this character, which is more interesting, but we will think of an unpleasant climax, but very plausible.

On one occasion, while roasting a fawn on a fire, he noticed (he had done so before) that certain liquids dripped from the food being cooked onto the fire. He already knew the method of putting out the fire when he finished cooking, to avoid accidents, so he proceeded to do so, but when he drained the water and stepped on it, he slipped and fell with his hands into the extinguished fire. He felt something other than the normal touch of water and he rubbed his hands, noticing so much that they felt slippery and suddenly foam was formed on them. At first he was scared, he tried what he had in his hands and he did not like it. He put his hands into the river to remove the strange substance and noticed two things: more foam was produced and the layer of dirt that covered them disappeared. He was so shocked that he took another amount of the foreign substance from the campfire residue and rubbed his body with it, diving into the water to remove everything. He came out of there with a clean body and hair lighter and silkier. He ran to where the tribe was eating, to try to show them his discovery, but they saw an individual very different from his fellow cook. Also, it smelled very different. Fearing that he was a spy for a hostile tribe, they stoned him to death. Soap was discovered, but its discoverer was eliminated. Sad fate of the first cook, the first firefighter, the first chemist and the first victim of chemistry.

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DOI: 10.31579/2766-2314/049