Biological Times

Volume No. 2 | Issue No. 6 | Pages 1-2

How to Preserve Meat for a long time?

Dr. Shameeran Salman Ismael Bamarni[1*]

1. **Medical Laboratory Sciences Department, College of Health Sciences, University of Duhok, Iraq**

*Corresponding Author: **shameeran.ismael@uod.ac; ORCID: https://orcid.org/0000-0002-6308-6943**

ABSTRACT

If red meat is preserved properly, it can be kept for weeks to years and cannot be spoilage. The common method for preservation is to freeze meat to maintain its temperature. There are other methods to preserve meat, some of which have been practiced for over a thousand years, including chilling, drying, canning, and adding chemicals such as salt. The main purpose of preservation is to maintain the features of meat and to prevent the growth of microorganisms that cause spoilage such as bacteria, parasites, viruses, and yeast. This article aimed to mention the easiest methods that can be used daily for the preservation of meat.

Keywords: Red Meat, Preservation, Methods, Spoilage

1. Introduction

As you know, Eid Ul-Adha is approaching. You will fulfill your religious obligations, and there will be plenty of leftover meat. Wasted meat in the trash is the last thing you need. You consider how to preserve the meat. You will suggest some methods for preserving meat.

Meat preservation is a technique for preserving meat's desired qualities or natural state for maximum health benefits [1]. Generally, preservation entails delaying the oxidation of fats that lead to rancidity and preventing the growth of microorganisms including bacteria, fungi, yeasts, and other microorganisms [2]. Meat preservation aimed to reduce oxidation and enzymatic deterioration as well as microbial spoilage. If meat is preserved properly, it can be kept for a long time may be weeks, months, or even years) without going bad. The most obvious and classical methods to store meat are by preserving it in a freezer, drying it, smoking it, adding salts, and canning it [3]. These preservation methods make it possible to eat this meat safely well after when they were harvested.

There are some recommendations before the preservation of meat: first, meat should be fresh and of good quality. To prevent the meat from deteriorating, meat must be kept in a refrigerator at suitable temperatures. Second, healthy and fresh meat is suitable for drying and canning; first, remove all fat from the meat. The objectives of meat preservation are: to prevent of meat borne diseases including first, parasitic diseases (like *Taenia saginata*, Coenurosis, Fascioliasis, and Hydatid disease), second, bacterial diseases (Bovine TB, Tetanus), third, viral diseases (Foot and Mouth disease, render pest, rabies), and finally other diseases are caused by Mycoplasma species and Rickettsia, prevent intoxications, prevent meat spoilage [4], kept meat for a long time, improve the meat's ability to be kept fresh, and minimize economic losses [5].

2. Common methods for preservation of meat:

2.1. Preservation of Meat by Chilling:

Fresh meat should be refrigerated at a temperature between 2 to 5°C [6]. Meat must be chilled to maintain its nutritional value, shelf life, appearance, and hygiene [7]. Chilling is a common way to preserve meat for a temporary or short time [6]. Because chilling meat decreases microbial growth and enzymatic and chemical reactions [3].

2.2. Preservation of meat by Freezing:

This method is the common and best way for the preservation of meat and preserving the original features of meat [8]. Microorganism growth and other chemical alterations that lead to deterioration are stopped by freezing [9]. There are three factors to effective meat freezing. The first is good packaging that limits moisture loss and prevents air interaction; the second is rapid freezing that minimizes damage to the meat, and the third is frozen storage at 18°C or lower. Additionally, it's crucial to keep in mind that frozen raw meats must be cooked thoroughly before consumption [9].

The first step for preserving it in the freezer is to get rid of all bones as you can because they take up a big space. Then, before placing the meat in the freezer, wrap it in thick aluminum foil or plastic to prevent freezer burn. Make sure that the package cannot contain any air. To make separation easier after freezing, put freezer paper between each slice of meat [10].

Only fresh, high-quality meat should be chosen for freezing. Because the salt in cured meats like ham and bacon accelerates rancidity, they can only be frozen for a short period of 1 to 3 months [10]. Meat cannot be preserved forever in the freezer. Each type has a special period, for example, steaks and chops can be safely frozen for 4–12 months. Raw ground meat can be kept in the freezer for up to three to four months and cooked meat can be kept for two to three months in the freezer [10].

2.3. Preservation of meat by adding salt:

This is the common and traditional way for the preservation of meat [6]. This method is effective and prevents the growth of salt-sensitive bacteria such as species of *Pseudomonas*, because salt is a source of osmotic stress which decreases the activity of water. Therefore, bacteria cannot grow when the activity of water decrease. While some microorganisms like yeast and lactic acid bacteria tolerate the salt and can grow in meat [11]. First meat is covered with salt and then dried in the air. Salt-cured meat can be stored for three to four months without refrigeration [5]. At cooking, meat should rinse all excess salt from the meat.

2.4. Preservation of meat by drying:

The popular method for the preservation of meat in ancient was by exposure of meat to sunlight for removing water and to prevent the growth of microbes causing meat spoilage. First, should cut the meat into thin slices and let it dry in the air. If the meat is dried correctly, it becomes hard and sticky. Meat dehydrated in this way will keep for two months when kept within sealed containers [12].

2.5. Preservation of meat by Canning:

All jars or cans must be processed with pressure at high temperatures for an extended period to eradicate all bacteria that cause spoilage and poisoning to guarantee the safety of canned meats. There are several steps of Canning including: First, choose meat with good quality. Then remove all bones and fat from it, precooking, filling, exhausting, seaming, thermal processing, cooling, and storage [5].

Despite the traditional methods for the preservation of red meat, there are new methods recently used such as natural antimicrobial compounds, bio-preservation, non-thermal inactivation technologies, and new packaging systems such as active packaging, and modified atmosphere packaging. All of these new methods attempt to be kind, environmentally friendly, and energy-efficient while maintaining a natural appearance and removing pathogens and spoilage microorganisms [14].

3. Conclusion and Recommendations:

Meat is an important source of protein for humans and is extremely susceptible to spoilage. Therefore, this article aimed to mention the main methods used for the preservation of fresh red meat includes: chilling, freezing, drying, adding salt, and canning. Despite the traditional methods for the preservation of red meat, there are new methods recently are used. It is recommended to eat meat fresh as soon as possible or preserved by one of the above-mentioned methods to prevent spoilage.

References

[1] Pal M. Application of Various Techniques for Meat Preservation. Journal of Experimental Food Chemistry. 2018, 4. 1-6.

[2] Nychas GJ, Skandamis PN, Tassou CC, Koutsoumanis KP. Meat spoilage during distribution. *Meat Sci.* 2008; 78(1-2):77-89. doi:10.1016/j.meatsci.2007.06.020

[3] Zhou GH, Xu XL, Liu Y. Preservation technologies for fresh meat - a review. *Meat Sci.* 2010; 86(1):119-128. doi:10.1016/j.meatsci.2010.04.033

[4] Bagamboula CF, Uyttendaele M Debevere J.Inhibitory effect of thyme and basil essential oils, carvacrol, thymol, estragol, linalool and pcymene towards Shigella sonnei and S. flexneri. Food Microbiology. 2004, 21: 33-42.

[5] Pal M. Preservation of various foods. Ph.D. Lecture Note, Addis Ababa University, College of Veterinary Medicine and Agriculture, Debre Zeit, Ethiopia. 2014, pp.1-11.

[6] Cassens RG. Meat Preservation, Preventing Losses, and Assuring Safety.1st Edn., Food and Nutrition Press, Inc. Trumbull, Connecticut, USA. 1994, pp: 79-92tkinson CT, Woods KL, Dusek RJ, Sileo LS, Iko WM. Wildlife disease and conservation in Hawaii: pathogenicity of avian malaria (*Plasmodium* relictum) in experimentally infected Iiwi (Vestiaria coccinea). Parasitology. 1995 Jan; 111(S1):S59-69.

[7] Carroll CD, Alvarado CZ. Comparison of air and immersion chilling on meat quality and shelf life of marinated broiler breast fillets. Poult Sci. 2008, 87(2):368-372. doi:10.3382/ps.2007-00213

[8] Heinz G. Hautzinger P. Meat Processing Technology for Small to Medium Scale Producers. RAP Publication. 2007/20. FAO, Bangkok

[9] Perez-Chabela ML, Mateo-Oyague J. Frozen meat: Quality and shelf life. In: Handbook of Frozen foods. Hui YH, CornillonI.G, Legaretta MH, Lim KD. Murrell. Kit Nip, W. (Eds.). Marcel Dekker Inc. NY. 2004, pp: 205. ISBN: 0-8247-4712-7

[10] USDA Complete Guide to Home Canning and Preserving. U.S. Department of Agriculture, 2009

[11] Doyle EM. Use of other preservatives to control Listeria in meat. 1999, Retrieved on 11th August 2010
[12] Manual on Simple Methods of Meat Preservation. Rome: Food and Agriculture Organization of the United Nations (FAO), 1990
[13] Lawrie RA, Ledward DA. Lawrie's Meat Science. 6th Edition, Woodhead, Cambridge. 2006, 11-30.
[14] Feiner G. Meat Products Handbook: Practical Science and Technology. CRC Press, Cambridge, England. 2006, pp. 73-74, 112-113.