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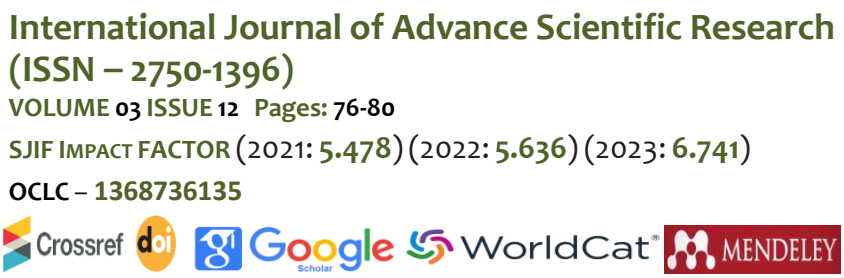

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Research Article

EXTENDING THE SHELF LIFE OF MEAT AND MEAT PRODUCTS

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ABSTRACT

Most meat products are a favorable environment for the development of various microorganisms, therefore they are perishable and have a limited shelf life. This article analyzes the methodology of preserving meat products, increasing its shelf life, and gives examples.

KEYWORDS

Meat, expiration dates, method, meat products, food additives, technical regulations.

INTRODUCTION

Various technological methods of canning prevent the development of microflora - bacteria, molds, yeasts. The most important technological barriers to preventing the development of microorganisms in meat products are heat treatment, acidity regulation, water activity, redox potential, modified gas environment, etc. A special place in this series is occupied by food

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additives: preservatives and acidity regulators , which have a bacteriostatic effect on microorganisms [1].

RESULTS AND DISCUSSION

Table salt is one of the oldest ways on the planet to extend the shelf life of meat products.

Advantages: as a preservative, table salt participates in ensuring the microbiological stability of the product as a result of reducing water activity, stopping or slowing down the growth of microorganisms, selective development of microflora (halophobic microorganisms die off). It is important to note that the bacteriostatic effect of salt occurs both in muscle tissue and directly in microbial cells, due to the removal of moisture from them.

Disadvantages: halophobic microorganisms make up no more than 5% of the total microflora. Some halotolerant microorganisms (for example, listeria) can withstand table salt concentrations of up to 10%. Halophilic microflora (no more than 10% of the total microflora composition) can withstand table salt concentrations of up to 16% (micrococci, staphyllococococci).

Preservative and color fixer sodium nitrite (E250), in the composition of curing mixtures with a sodium nitrite content of no more than 0.9%. Without sodium nitrite, the production of most of the range of meat products is impossible.

Advantages: guarantees the microbiological safety of products, suppresses the growth of pathogenic microorganisms, the formation of toxins caused by the anaerobic bacterium Clostridium botulinum. Provides color and aroma formation.

Disadvantages: unreasonable media formation of negative attitudes on the part of consumers. Sodium nitrite is a food additive of artificial origin, unsafe in large quantities. In the meat industry, it is used in tiny technologically necessary application doses (about 0.008%), exceeding which even 3-4 times will not harm safety, but may negatively affect the quality of the finished product.

Preservatives benzoic (E210), dehydracetic (E265) acids and their salts (E211, E212, E266) are allowed for surface treatment of meat products, sausages and casings and as part of coatings.

Advantages: benzoic acid has a strong bactericidal effect on yeast and other microorganisms, blocks enzymes, and slows down metabolism in single-celled organisms. Dehydroacetic acid and its salt are effective against molds and yeasts and have higher anti-mold activity than sorbic acid.

Disadvantages: Benzoic acid exhibits antimicrobial effects only in acidic foods at pH up to 5, since only undissociated acid can penetrate the cell wall.

Preservatives sorbic acid (E200), sorbates (E201, E202) and parabens (E214, E215, E218, E219) are allowed to be added to jelly when making meat products in jelly, as well as pates [3].

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Advantages: sorbic acid is effective against yeast and mold, blocks enzymes in the metabolism of microorganisms. Shows antimicrobial effect at pH below 6.5. Parabens slow down the absorption of glucose and proline by microorganisms and disrupt the complex structure of the cell membrane. The antimicrobial effect of parabens is practically independent of pH.

Disadvantages: sorbic acid does not destroy microflora, but only slows down its development. Parabens may change the taste of the product.

The preservative and acidity regulator acetic acid (E260) and the acidity regulator lactic acid (E270) have no restrictions on their use in meat products. As food additives with a preservative effect they are used only in the production of marinated semi-finished products (kebabs, etc.). They are used in specifications for the production of meat products.

Advantages: acetic acid reduces the pH of the canned product, penetrates the cell wall and denatures cell plasma proteins, and is effective against bacteria. Increases the sensitivity of bacteria to heat.

Disadvantages: acetic acid does not affect the heat resistance of yeast and molds. The use of acetic and lactic acids in the concentration required for canning (over 0.5–1%) has a negative effect on the taste.

Sodium lactates (E325) and potassium (E326). There are no restrictions for use in meat products. They are used in GOST, GOST R and TU for the production of semi-finished products and meat products.

Advantages: sodium lactate reduces the activity of water in the product and the pH of intracellular substrates due to the formation of undissociated fractions of lactic acid, their penetration into the microbial cell and subsequent dissociation inside it. Allows you to retard the growth of microflora without reducing the pH of the product. Shows antimicrobial action against a large number of microorganisms: Listeria monocytogenes, Clostridium botulinum, Escherichia coli, Salmonella, Staphylococcus aureus, Pseudomonas, etc.

Disadvantages: lactates do not have a bactericidal effect, they only slow down the growth and reproduction of bacteria, i.e. are bacteriostatic.

Chitosan is an antioxidant, a polysaccharide, and does not have an E-index. It is used as part of complex food additives to increase the shelf life and improve the structural and mechanical properties of sausages.

Advantages: the chitosan molecule contains a large number of free amino groups, due to which chitosan is able to bind and firmly hold ions of various metals, making them inactive as catalysts for oxidative processes. A water-soluble chitosan derivative (N-carboxymethyl-chitosan), when binding to meat proteins, binds iron atoms and protects them from a negative reaction with oxygen. It has antibacterial, antifungal and antiviral properties, inhibits the growth and reproduction of bacteria, and inhibits the growth of mold [4].

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Disadvantages: sparingly soluble in water - the bonds between chitosan molecules are stronger than between chitosan molecules and water molecules, while it is highly soluble in food acids; commercial water-soluble forms are available. Complex food bacteriostatics become significantly more expensive.

Plant extracts are natural antioxidants, usually without E-indexes.

Advantages: protect lipids and proteins of meat systems from oxidation: extracts from the peel of persimmon, wormwood, rooibos, sea buckthorn, sage, rosemary, grapes, etc. Rosemary extract (E392) is approved for meat products except dried meat and cured sausages; it contains a wide range of phenolic diterpenes, which, even at a temperature of 170 ° C, are active antioxidants in fat, which indicates their high thermal stability. Birch bark extract is used for surface treatment of products or packaging and includes terpenoids that have antimicrobial properties that inhibit the growth of various microorganisms (bacteria, mold, fungi).

Disadvantages: instability to the influence of certain technological factors (temperature, pH of the environment, light, time), possible negative impact on taste.

Conclusion

Despite the urgency of this issue, so beloved by television, special organizations have been working hard for decades to research ways to maintain quality and safety throughout the entire "life cycle" chain of finished products - from raw materials to the consumer.

The recommended shelf life of meat products according to GOST, regulated by technological instructions for their production, developed by special organizations, has long served as a guideline for all meat processing companies in the country. Special organizations provide professional assistance to industry enterprises in the development and selection of comprehensive techniques to increase the shelf life of various types of meat products.

References

1. Kostenko Yu.G., Bataeva D.S., Krasnova M.A. Sanitary and microbiological aspects of the production of chilled pork with a long shelf life // Meat industry. — 2019. — No. 4 — pp. 66–67.
2. Semenova A.A., Solovyov O.V., Lebedeva L.I., Gundyreva M.I., Kholodov F.V. Alternative methods of deboning pork at medium and small enterprises // All about meat. - 2010. - No. 2. - P. 30–31.
3. Poznyshev V. Secrets of smoking meat products // Food-PromExpert - 2012. - No. 2 - pp. 32–37.
4. Semenova A.A., Motovilina A.A., Lebedeva L.I., Veretov L.A. Technology for increasing the shelf life of boiled-smoked sausages at high positive storage temperatures // All about meat - 2011. - No. 3. - p. 12–13.
5. Semenova A.A., Veretov L.A., Bolshakov O.V., Koreshkov V.N. Connected by one

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cold chain // All about meat - 2011. - No. 6.
- p. 4–6.