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RESEARCH FOR OBTAINING THE FRESH SAUSAGE

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Abstract: *Sausage is an ancient food type that is nowadays considered as a delicatessen. Sausages are categorized within the deli sector as meat sub products. It is a food product preferred by consumers due to its nutritional value and organoleptic characteristics (wide range of flavors and textures). A fresh sausage is not cooked nor smoked and that explains the ease of its production. The taste of the sausage will depend on meats that were selected and spices which were added to the mix.*
The aim of this paper is to describe the technological process of making fresh sausage and analyzing it from an organoleptic and physico-chemical point of view.
Keywords: *fresh sausage, organoleptic characteristics, physico-chemical characteristics.*

1. INTRODUCTION

Meat is an important source of food in human nutrition, and it is indispensable to life. The meat, regardless of the animal from which it comes (pig, beef, sheep, bird) has a composition, appropriate to the age and nutritional status of the animal. Meat, through its proteins, is an important source of nitrogenous substances of particular biological value. Biological value is conditioned in particular by the content of essential amino acids.
Color of meat is an important quality attribute that influences consumer acceptance of meat and meat products [1]. The surface color of meat depends on the quantity of myoglobin present, on its chemical state and also on the chemical and physical conditions of other components in the meat [5]. Meat showing a bright red color is assumed to be fresh, while oxidation of heme iron to form metmyog lobin produces the brown color which consumers find undesirable. A trend in th e pork industry towards high oxygen modified atmosphere packaging (MAP) is emerging. Although high oxygen MAP stabilizes fresh beef color, the effect in pork is inconsistent [2]. Ground pork, which is especially susceptible to oxidation due to the incorporation of oxygen and trace metals during grinding, is used in a variety of processed products and its relatively short color shelf-life limits its potential value (Phillips et al., Sausages are products manufactured from fresh comminuted meats from different meat species, such as pork, beef, chicken, fish and buffalo [4]. The comminuted meats are then modified by various processing technologies and stuffed in a casing to yield specific sensory and storage characteristics [6]. Preservatives are commonly used to enhance their quality, shelf life and safety [7].
Fresh sausages are highly perishable products since it is manufactured from fresh ground meat, is favorable for microbial growth of spoilage and pathogenic organisms, has a high fat content favorable for lipid oxidation, is stored in oxygen semi-permeable packaging and is kept at refrigeration temperatures. These products, therefore, need to be preserved to maintain the quality of the products.
Fresh sausages represent a source of cross contamination during meal preparation. Therefore, delaying lipid oxidation and preventing bacterial growth are factors that can have a significant contribution towards the extension of shelf life. Meat product manufacturers in the past few decades have used several synthetic food additives with antioxidative and antimicrobial properties. Nowadays, increasing consumer awareness and health-consciousness have resulted in pressure to avoid the use of synthetic additives.
According to the Food Safety and Inspection Service (FSIS) of the United States Department of Agriculture [8], fresh sausages are a coarse or finely comminuted (reduced to minute particles) meat food product prepared from one or more kinds of meat, or meat and meat byproducts (e.g., heart, kidney, liver). They may contain no more than 3% water of the total ingredients in the product. Fresh sausages are usually seasoned, frequently cured, and may contain binders and extenders (e.g., wheat flour, nonfat dry milk). They must be refrigerated and thoroughly cooked before eating.

2. MATERIALS AND METHODS

The raw materials used in the manufacture of fresh sausages are: beef, pork, sheep, raw or slightly salted fat, slaughter by-products, organs, food blood. All raw materials are stored, before being introduced into the

technological flow, maximum 72 hours in cold storage at an air temperature of 4ºC. The raw materials must carry the health mark according to the Order no. 10 / 18-02-2008.
The technological process of manufacturing meat preparations consists of the following operations:

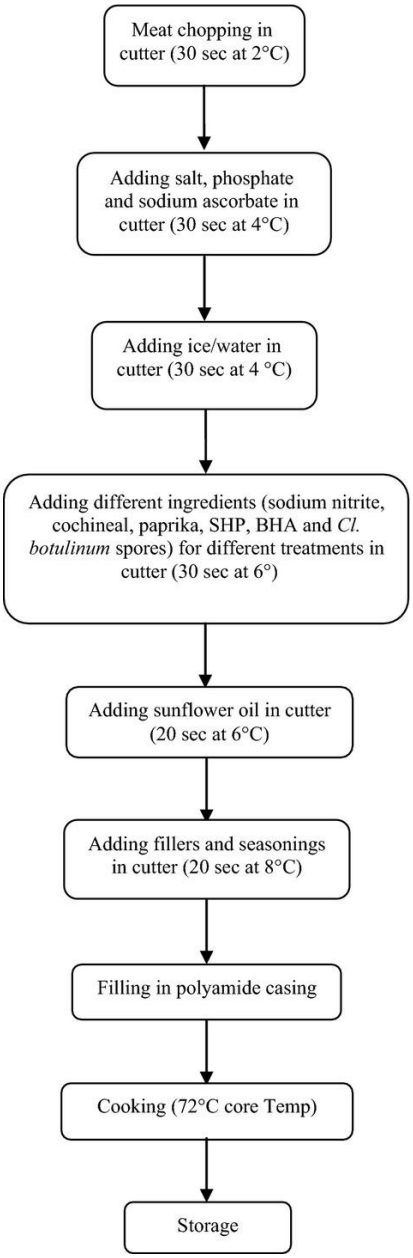

Figure 1: Process flow for production of sausage

In order to obtain fresh sausages, the following technological recipe is used:
- pork meat: 400g;
- beef: 300g;
- fat: 100g;
- salt: 15g;
-piper: 10g;
- Garlic: 25g;
- technological water 150ml.

The tools needed in the process of obtaining fresh sausages are: for shredding, for homogenizing, for filling the membranes with the specific composition.
The universal grinding machine Philips consists of: web, knife, snail, socket.

In order to chop the meat, both the sieves and the knives need to be well sharpened, in order to cut the pieces of meat as easily as possible, thus preventing excessive pressing and heating of the meat. The screens are fixed in the cutting system housing, and the knives, on the axis of the screw, rotate with it.
The construction of the main parts of the grinding machine, the housing, the feed mechanism and the cutting mechanism are according to their working capacity and field of use. The feed mechanism consists of a screw drive conveyor that pushes the raw material to the cutting mechanism.
The raw material may be taken directly from the feed funnel or from one or more feed spirals.
The pork meat is chopped by 8mm mesh and the beef and fat are chopped by 4mm mesh. The composition is mixed with technological water and spices, and then introduced into membranes. The composition is introduced into natural pork membranes. After filling, the membranes are twist from 20 to 20 cm, forming twists. If air bubbles are observed beneath the membrane, the portions become swollen. Fresh sausages are stored in dry and well-ventilated refrigerated rooms, at a temperature of 10 ... 12 ° C. Sausages are stored on sticks placed on racks with spaces between 5-7 cm strokes, to allow air circulation and drying as evenly as possible. The homemade sausages are marked by labeling according to the provisions of STAS 3103-83.
The control of fresh sausages consists of the organoleptic examination and the physico-chemical parameters. Among the physico-chemical parameters were the pH and humidity.
PH measurement: a section is made in the piece of meat and a strip of pH paper is inserted in it and then the pH paper is compared with the standard that accompanies it. According to the norms of the Ministry of Health and Family, the pH value of fresh meat is:
-beef: 5.5-5.8;
- pork meat: 5.8-7.2.
The moisture content is determined by the drying method in the oven at 150 ° C.
How to work: about 5 g of the prepared sample is placed in the vial and weighed again with an accuracy of 0.001 g. After weighing, about 5 cm3 of ethyl alcohol is poured into the vial and the beaker is well homogenized by crushing the agglomerated meat particles (the wand must remain in the vial at all times). The vial containing sand, wand, sample and about 5 cm 3 ethyl alcohol, with the lid on, is introduced into the first regulated oven at 70-75 ° C, where it is kept for 30 minutes, stirring occasionally with the wand, until evaporation of alcohol. The temperature of the stove is then adjusted to 150 ° C and the heating is continued exactly one hour from the time it reaches 150 ° C. Cover the vial with the lid and place in the desiccator, after 30 minutes, the cooled vial is weighed.
The water content is calculated by the formula:

$$Mc = \frac{m_1 - m_2}{m} \cdot 100\ \% \qquad (1)$$

which:
m - mass of the product taken for determination, g;
m_1 - mass of product and vial before drying, g;
m_2 - mass of product and vial after drying, g.

3. RESULTS AND DISCUSSIONS

Following the organoleptic analysis of the sausages, the following characteristics have resulted (tab. 1).

Table 1: Organoleptic characteristics of fresh sausages

Organoleptic characteristics	**Description of the characteristics**
Exterior appearance, shape	Whole pieces, tied at the ends, sometimes longitudinally and transversely. With a clean surface, without creases and cracks, without stains or mold.
Consistency	The sausages have an elastic consistency, when lightly pressed with the finger returns to the original shape.
Appearance in section and color	Composition well bound, compact and uniform, without air voids, congestion of air or melted fat in the mass or under the membrane, without pieces of flashes, pale pink color, uniform throughout the mass.
Smell	Very pleasant smell, specific to the fresh product and the spices used and, as the case may be, the added ingredients, without foreign smells.
Taste	Very pleasant taste, aromatized specifically to the fresh product, and the spices used, with no foreign taste.

According to the results in table 1, it was found that the product obtained corresponds in terms of quality and are good for consumption.

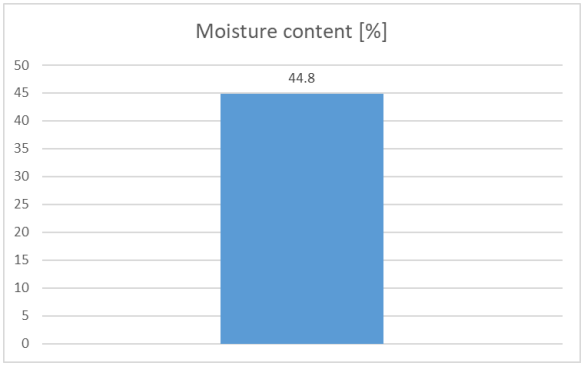

Figure 2: Sausage moisture content

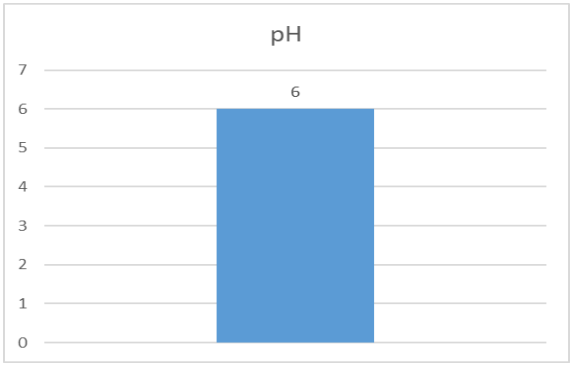

Figure 3: pH value

Analyzing the graphs in figures 2 and 3 it is found that from a physico-chemical point of view the fresh sausage falls within the values established by the standard.

4. CONCLUSION

Sausages are categorized within the deli sector as meat sub products. It is a food product preferred by consumers due to its nutritional value and organoleptic characteristics (wide range of flavors and textures).
Fresh sausages are highly perishable products since it is manufactured from fresh ground meat, is favorable for microbial growth of spoilage and pathogenic organisms, has a high fat content favorable for lipid oxidation, is stored in oxygen semi-permeable packaging and is kept at refrigeration temperatures.
According to the results obtain from the organoleptic and physico-chemical characteristics

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