



MODERN ASPECTS REGARDING THE TECHNOLOGICAL PROCESS AND THE TECHNICAL EQUIPMENT USED IN PRODUCING COLD CUTS

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Abstract: This paper presents introductive notions about the cold cuts, as well as the technological process of their production, which is illustrated through a scheme. There are described all the stages of the process, as well as the technical equipment used in the majority of the modern units from the meat industry. In order to obtain qualitative cold cuts, the sanitary veterinary regulations should be followed as well as the functioning parameters of the technical equipment which were used.

Keywords: *cold cuts, technological products, cold cuts processing, technical equipment.*

1. INTRODUCTION

Under the term of cold cuts, in the broad sense, we understand products made of ground meat which is seasoned and added into a casing, natural or synthetic; then they undergo a thermal processing after which they can be used in alimentation as such, without cooking them. In a narrow sense, cold cuts are those food products which undergo processes like boiling and smoking, or sometimes only boiling and they have a short period of preservation. The food products with a bigger period of preservation are called salami. As raw material for the cold cuts there are used, most of the time, beef, pork, pork fat, liver and by-products which are rich in gelatine (pork ears, legs, etc) and sometimes pork brain, heart, spleen, lungs, rumen, stomach, etc. After the technological process is applied to the raw material, the following products are produced as cold cuts: fresh or boiled salami, processed as a fine paste from the ground meat, then they are smoked at a warm temperature, boiled and cooled (Bologna sausage, Polish sausages, Vienna sausages, etc.), semi-smoked salami, made of both finely minced meat, but also thicker minced meat processed through warm smoking, boiling and then cold smoking (Italian, Russian, “hunter” salami etc.); long-lasting salami, made of finely or thicker minced meat, without adding paste and processed through cold smoking and drying (winter salami) or only through drying. The meat is brought from the slaughterhouse in different thermal states like, for example: warm, dried and cooled; also, frozen meat can also be used, to a certain extent. The economic agents which produce and commercialize meat products carry out their activities by following the regulations in force.

The quality and safety of agri-food products can be obtained only by applying good production and hygienic practices in all processing stages, from the reception of raw materials until their commercialization to the consumer.



Fig.1 cold cuts

2. MATERIAL AND METHOD

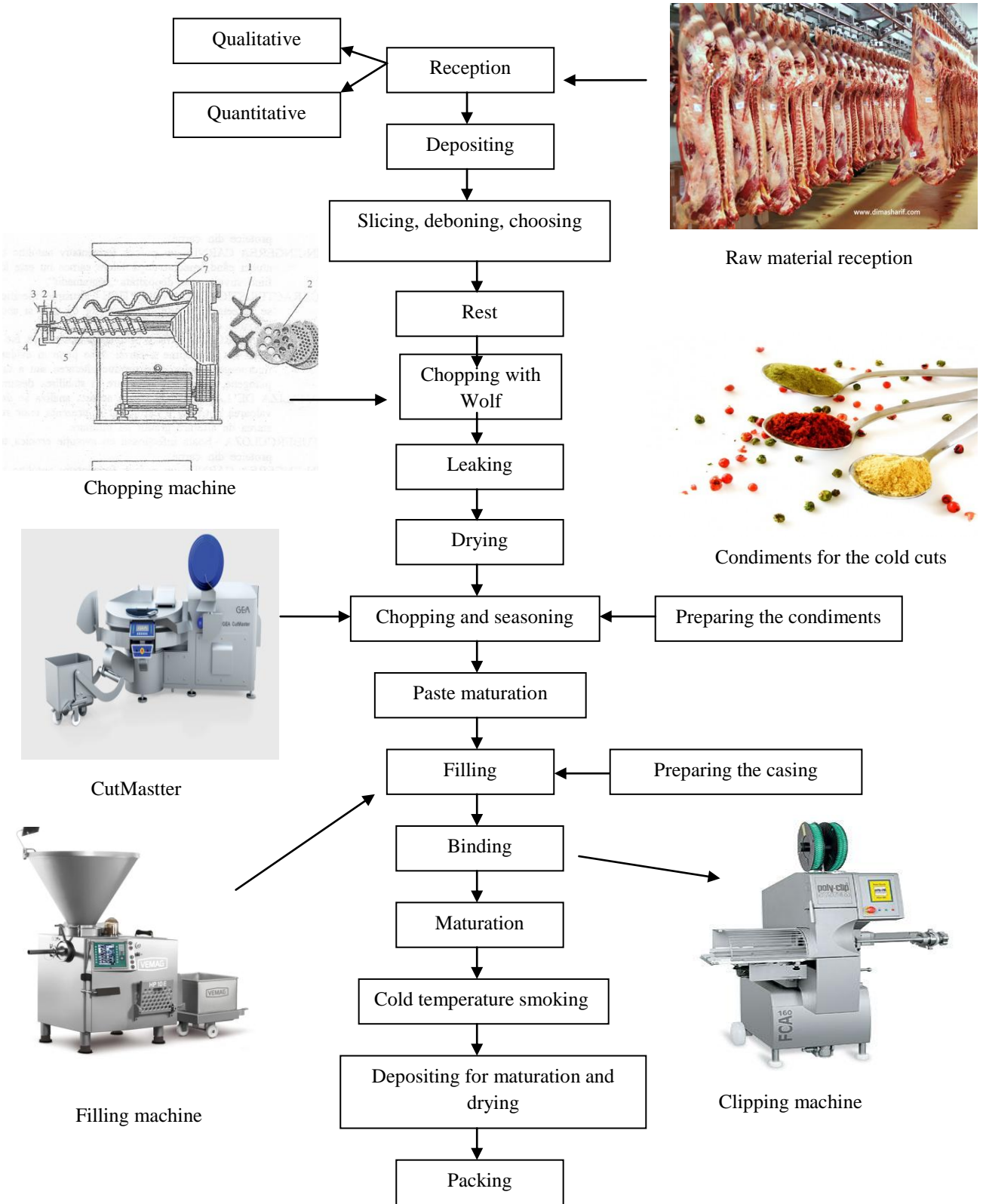


Fig.2 The technological processing scheme of dried- raw cold cuts

3. RESULTS AND DISCUSSION

Reception of raw material consists of a qualitative reception which is sensory determined by slicing and the aspect, colour and smell of the meat, and of a quantitative reception which is realised in a gravimetric way with the help of a scale which is also helpful in the transportation of the carcass to the slicing. The quality of the raw material determines the quality of the final products. In the production of meat products there can be used beef, pork meat, poultry meat (chicken, hen, turkey), organs and also some edible by-products from the slaughterhouse. The meat should come from healthy animals which are well-fed and rested and which are cut under the conditions of the sanitary veterinary laws.

Slicing is a technological operation through which the quarters, the halves and the full carcasses are divided into large anatomical parts (thighs, back, loin, breast, etc.).

Deboning is the operation through which the fat, muscle and connective tissues are separated from the bones.

Choosing the meat is an operation made in order to eliminate the tendons, fats, the fascia, vascular and nerve cords, cartilages, scraps of bones, blood clots and stamped areas.

Grinding is used in order to: prepare the raw material before producing the bradt; obtain the compositions for the salami which have a thicker texture with meat particles and with visible fat tissues; to prepare the raw material in order to obtain some types of canned meat (pate, meat paste, beef and pork in own juice). The machines used for the grinding are of a simple construction and they realize a good processing of raw materials, making it easy to exploit and making it possible for them to be included in mechanized and automated line. The grinding of meat, fats and organs which are in a refrigerated or blanched state is realized through **Wolf meat grinding machines**. Depending of the way of taking over the raw material, there are:

- Grinding machines with direct takeover from the alimentation bunker (alimentation funnel);
- Grinding machine which does the takeover from the alimentation bunker through one or two horizontal or inclined spiral feeds.

The main components of the grinding machine are:

- the auger. The speed of the auger is in-between 100 - 200 rot/min for grinding machines with a lower speed; 200 – 300 rot/min for higher speed and over 300 rot/min for fast machines.
- a rotating blade with the speed in-between 10 - 15 rot/min:
- the cutting mechanism. The cutting mechanism is the frontal part of the grinding machine and it consists of knives and grinding plates. There are used knives with cross-form or wing-form, which can cut only on one side or on both sides.

The diameter of the grinding plates is specific to each grinding machine, varying in-between 100 - 285 mm, and the outlet can have diameters of 25, 20, 16, 14, 12, 10, 8, 5, 3, 2 mm, which makes possible for the meat to be chopped at different sizes. If there are used more knives and grinding plates, the order in which they are assembled is the following: grinding plate with big holes-blade with two cutting edges; grinding plate with small holes-blade with two cutting edges; grinding plate with even smaller holes; axes ringer and locknut.

Fine grinding-the cutters are for the fine grinding of the meat and other raw materials in order to obtain bradt, composition for fresh products and for paste products. Cutters have the same functioning principles, but they are different in terms of:

- the way of removing the meat holder: mechanized or non-mechanized;
- the way of heating or cooling the meat holder: with or without jacket cooling and heating;
- working mode: with or without vacuuming;
- the number of electric motors: with one or two electric motors, of which one is for training the blade gear and the other is for the meat holder's rotation.

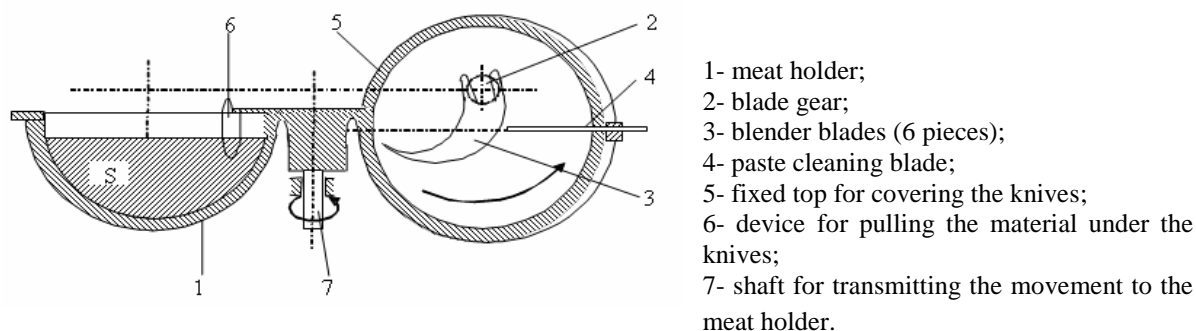


Fig.3 The theoretical sketch of a cutter

During the fine grinding there also added the condiments.

Filling the casing with the composition – the filling process (watering) in the casing it is a process of plastic deformation by pushing the composition through the pipe. The flow is produced only on the minimal line of resistance and only then the travel pressure reaches a certain value. The working pressure varies for the different types of salami, they are dependent of the viscosity of the paste and, at the same time, of the humidity level of the composition and of the fat content which assures a certain lubrication when it comes to pushing the paste through the filling pipe, and, also a lower degree of adherence when pushing the composition. The casing can be of three types: natural; synthetic or semi-synthetic.



Fig. 4 Filling the casing with the composition

Linking – after the composition has been introduced into the casings, the linking is being made. The linking method depends of the casing's diameter and the weight of the meat. For bars with $\Phi > 60$ mm and the length in-between 30 – 60 cm there can be made transversal and longitudinal linking, especially when natural casings are used. After a break of 2 - 10 minutes the products undergo the thermal treatment (warm smoking and pasteurisation).

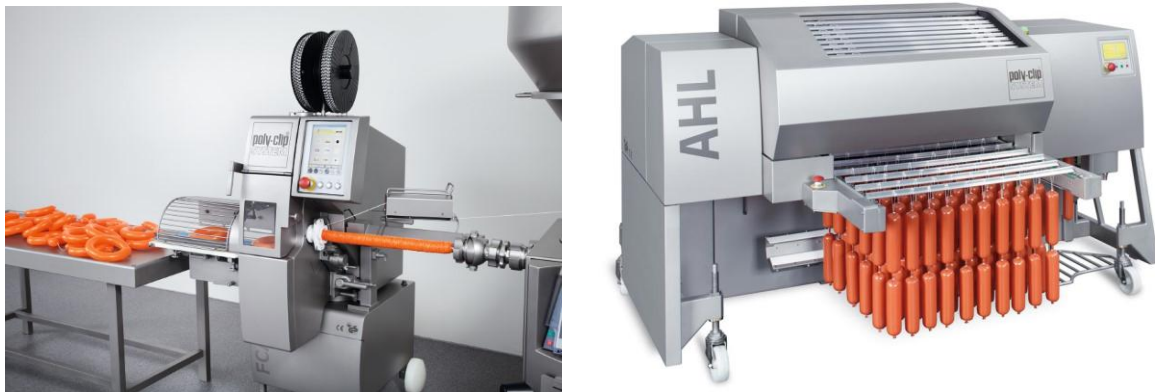


Fig. 5 Linking

Smoking meat products – in general, the parameters which should be respected when it comes to smoking (temperature and duration) depend of the product type, the thickness of the bar, the presence or absence of the casing. For the smoking there is used a classic smoking cell, and that means that the pasteurisation is done separately, in a pasteurisation basin or with a complex equipment in which take place the smoking, pasteurisation and the cooling.

Depositing the meat products. The meat products are deposited at different temperatures depending of the product type:

- in-between 2 – 5°C for fresh sausages (a warranty period of 2 days), blood pudding, dishes using pig's feet, head and ears suspended in aspic, Leberkäse and boiled pork fat with paprika, fresh stuff like the Bologna sausage, Polish sausage, Frankfurter and other specialties (a warranty period of 3 days);
- in-between 10 - 12°C for semi-smoked salami (a warranty period of 6 days); the summer salami can be kept for 15 days;
- in-between 12 – 15°C for smoked products (smoked ham, smoked ribs, smoked bacon, bacon). In this situation the warranty period is of 15 days;

- in-between 12 – 16°C for smoked pork fat;
- in-between 16 – 18°C for smoked lamb, for which the warranty period is of 7 days. For all of the common meat products the relative humidity of the air from the depositing spaces is in-between 75 – 80%.

Labelling the products made of meat is done manually or with the help of the clipping machines. The labels should contain:

- the name of the product,
- the symbol or the brand of the manufacturer,
- quality class,
- net quantity,
- manufacturing date,
- warranty period,
- depositing and keeping conditions.

On the label there are also noted the content of the recipe, the used additives, the nutritional value and the use instructions. The graphic image from the label should be an appropriate representation of the product, in order to avoid the negative reaction of the consumers.

4. CONCLUSIONS:

1. The meat products are very important for the organism because of their high level of protein and mineral substances, but there must also be taken into account the daily consumed quantity.
2. Because the quality of the meat products has direct influence on the health of the consumers, the hygienic conditions and the good production practice must be fulfilled. In order to assure the quality, the legislative regulations require that the preparation, processing, fabrication, depositing, transportation and distribution of meat to be effectuated under strict hygienic conditions.
3. In order to obtain meat products of good quality a very important role is that of meeting the qualitative criteria of the raw material that goes under processing, but also of following the technological process of each assortment.

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