



REGIONALNA PRIVREDNA
KOMORA LESKOVAC



HACCP Case study

LESKOVAC GRILL

MINCED MEAT



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1. Introduction

A family-owned medium size meat producer has been asked by local retail customers to provide a HACCP Plan for one of the product, pasteurized milk.

2. Terms of reference

The HACCP study covers all types of food safety hazards, biological, chemical and physical. It does not include any cleaning and sanitation operations which are covered by the plant Good Manufacturing Practice procedures and Good Hygiene practice.

3. Product description

3.1 General

Leskovac grill minced meat is one of most important products in Leskovac area. It is recognised all over the country and abroad. Grill meat is product with long tradition in Leskovac area and it is produced from healthy domestic cattle type Simmental.

3.2 Ingredients

Salt to 2% calculated on the finished product, additives in amounts that correspond to the rules of good manufacturing practice, soybean (E-341 and E-300) in the amount of 7 grams per 1 kg., with water content of 58 to 61% and fat 17% to 20%.

3.3 Process

See figure one – process flow diagram

3.4 Products specifications

Microbiological – see Table 1.



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3.5 Package

Product is packed in plastic packages, white transparent bags of standard dimensions with duplex printing, regardless of the expiration date, or if it is frozen or ordinary product. The basic unit of packaging for unformed products is 1 kg, and for shaped products (burgers, grilled meat dumplings) is 1 kg and less.

3.6 Shelf life

48 hours at the temperature +4 degrees Celsius

60 days at the temperature -18 degrees Celsius

3.7 Nutrition values

Total average energy value 927 KJ/100 g, 687 KJ/100 g being from the fats

Product has in average: Water 58-61 (%), Proteins 19-20 (%), Fats 17-20 (%), Energy value 927 KJ/100 g, 687 KJ/100 g

3.8 Intended use

For general public all ages.

3.9 Uses

Meat can be considered as universal food.

3.10 Consumer instructions are as follows:

Keep refrigerated under 4 °C.



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MICROBIOLOGICAL	CHEMICAL	PHYSICAL
<ul style="list-style-type: none">• pathogenic (disease causing) micro-organisms• cross-contamination• spoilage micro-organisms (a concern when histamine producing fish)• parasites	<ul style="list-style-type: none">• toxins• chemical cleaners/ sanitizers• food additives• undeclared allergens	<ul style="list-style-type: none">• foreign bodies• packaging



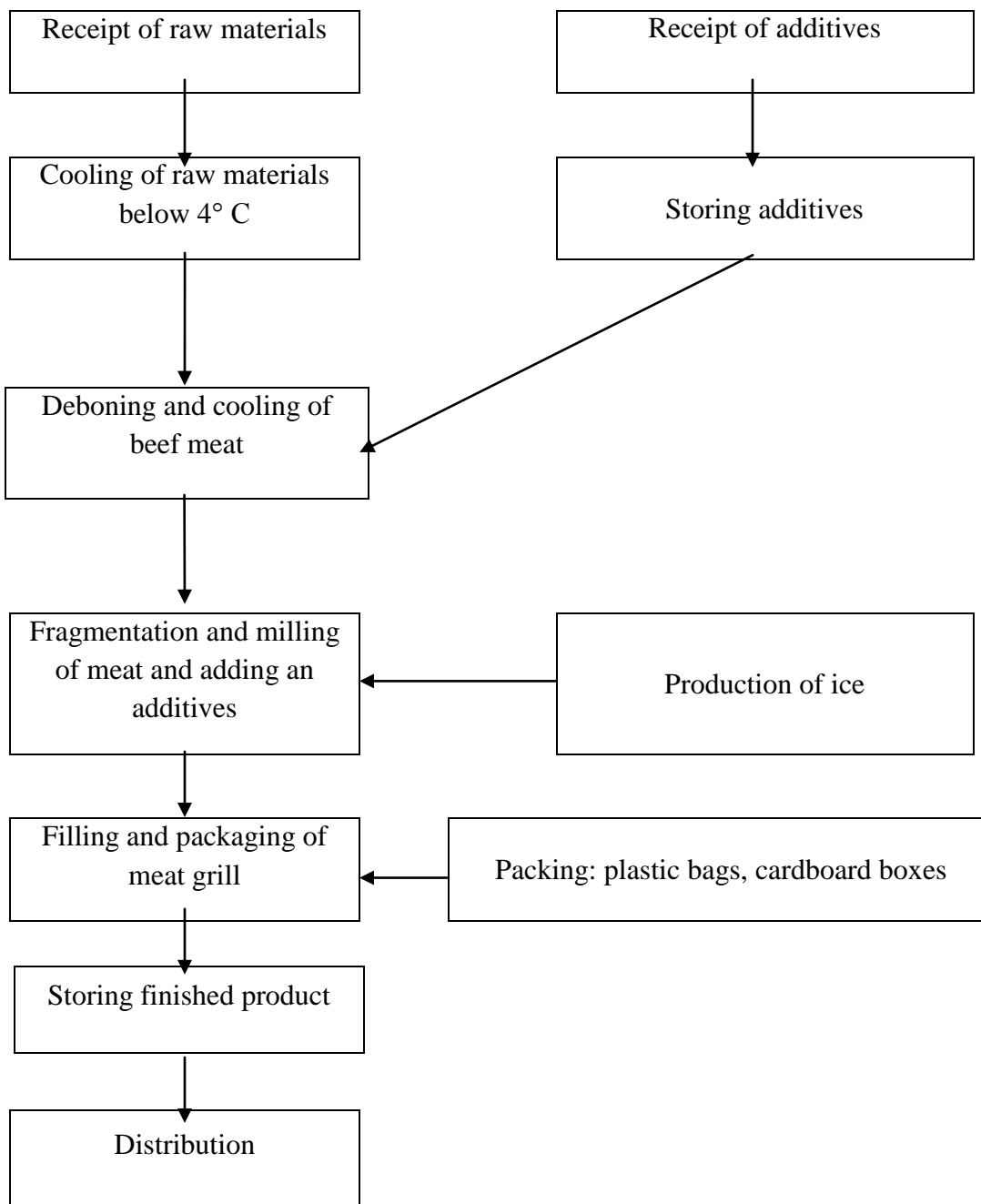
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Process diagram of production



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4.1 Receipt of raw materijals

Leskovac grill meat is produced from hulls weighting at least 200 kg. Musclature on hull should be well developed but not more clearly developed in the leg and buttocks than on beck, shoulders and other parts.

Musculature of the tigh, flank and back should be very developed, those parts should be full, rounded, stocky and relatively more developed than other parts of the hull, giving the entire hull compact, compact, stocky, rounded appearance. Musculature of the thigh should be broad, weather viewed from the side or back and its beginning should be close to the ankle. Viewed from the side musculature of the leg should form a more rounded appearance of the leg, starting from the upper part of the shank as close to the ankle and that equally embraces femur – lap part, so that the central and side lines are parallel and not tapered.

Musculature of the loins and back should be rounded and full, so that sections of the muscles in those areas are more round shape and have the largest area of intersection.

Lateral line that extends from the tops of extensions should be convex and should be in a wide arc to the bottom (ventral) parts of the loin and back. Whole hull can have a slightly greater length than the width and the front part may be more developed than the rear of the fuselage. Seen from the side leg may have less convex line on the back and the distance between the leg muscles may be slightly higher. Viewed from the back leg muscles can begin also from the shank and it may has a look of conical shape .

Pelvis should be filled with well – developed musculature on the top and the sides so that side edges must be straight, with no dents. The lumber and dorsal part of the line that extends laterally from the tops of extensions has to be slightly convex, which means that section of this part of the musculature has a round shape with sufficient shape.



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Image 1: Meat of Jablanica semental – hull.

Color of beef meat should be bright red with no shades of brown or blue color.

Color of fat should be light yellow with no shades of yellow color.

The meat should have a fine structure where the cross sections of muscles have no clear boundaries between beams, i.e. the cut surface appears homogeneous. The connective tissue of muscle membranes have a fine texture, are not very thick,

4.2 Cooling of raw materials

Hulls are cooled so that temperature measured in a depth of meat leg after 24 hours of cooling is more than 4° C, or between 0 and 4° C.

Hulls are stored in refrigeration conditions for at least 48 hours.



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4.3 Deboning and cooling of beef meat

Hulls are cut on the front and rear quarter to slice up front quarter to get essential parts, i.e. neck, shoulder, back, ribs, belly and forearm.



Image 2: Meat from neck, shoulders, beck, ribs and belly cut into pieces and prepared for production of Leskovac minced meat.

For the production of Leskovac minced meat neck, shoulder, back, ribs and belly are deboned and processed. From last quarter is used thigh meat and loin meat. Pieces of meat are released from the rough and bloody parts of the connective tissue and then cut into pieces of weight from 300 to 500 grams.



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4.4 Fragmentation and milling of meat and adding an aditives

The maet is chopped in a food processor shredding (cutter). Shredding meat is done to a certain grit, and in the processing of meat are added hydrated soy protein products (soy flour, soy protein, soy concentrate or soy isolate), salt and additives (calcium phosphate and vitamin C).

Processing of the cutter requires special attention because it must not be allowed to get excessive fragmentation of meat batter. From the obtained mass can be formed “burgers” by manual processing (clapping), and “grilled meat dumplings” that are formed by hand or using a funnel (filling machine with funnel).



Image 3: Prepared grill meat for packing



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4.5 Filling and packaging of meat grill

The prepared compound of the finished product is packed in plastic, white, transparent bags of standard dimensions with duplex printing, regardless of the expiration date, for frozen and for ordinary product. The weight of basic unit of packing for unformed mixture of product is 1 kg. Formed products also can be packed in modified atmosphere gases.

Molded products include the grilled meat dumplings thickness 2 cm and 5 cm in length, and burger mass of five or ten grilled meat dumplings thickness of 2 cm (burger), 100 g – 5 grilled meat dumplings, and 200 g - 10 grilled meat dumplings,

For the purposes of wholesale product is packed in a carton of 20 kg – transport, commercial packing.



Image 4: Individual product packing



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4.6 Identification of CCPs

No	Process Step	Potential hazards and possible causes	Control measures	*	*	*	CCP
				Q 1	Q 2	Q 3	Y/N
1	Receipt of raw materials	B-Growth of pathogenic microorganisms, changes of sensory characteristics	Mentain the temperature below 4°C	Y	Y	N	Y
2	Cooling of raw materials below 4°C	B-Growth of pathogenic microorganisms, changes of sensory characteristics	Controlling the temperature and duration of operations	Y	N	N	Y
3	Deboning of beef meat	B-Growth of pathogenic microorganisms	Visual inspection. Temperature control (up to 10°C) and duration of operations (2 hours)	Y	N	N	Y
4	Cooling of deboned beef meat	B-Growth of pathogenic microorganisms, changes of sensory characteristics	Control temperature (2-4°C) and duration of operations (2 hours)	Y	Y	Y	Y
5	Fragmentation and milling of meat and adding an additives	C-Larger amounts of polyphosphates	Applaing of production specifications, 7g/kg P205, up to the total 3g/kg.	Y	N	N	Y
6	Filling and packaging of meat grill	P-Damaged container, foreign substances	Visual control.	Y	N	Y	Y



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7	Filling and packaging of meat grill	B-Growth of pathogenic microorganisms, changes of sensory characteristics	Temperature control (4°C) and storage time (6 hours)	Y	Y	N	Y
8	Distribution	B-Growth of pathogenic microorganisms, changes of sensory characteristics	Control of temperature (4°C) and time of distribution (6 hours)	Y	Y	N	Y

* Questions of the Decision Tree

Q1 Is there a hazard associated with this raw material?

Yes: Go to Q2 / *No:* Proceed to next raw material

Q2 Are you or the consumer going to process this hazard out of the product in a subsequent step?

Yes: Go to Q3 / *No:* CCP. Sensitive raw material, high level of control required

Q3 Is there a cross-contamination risk to the facility or to other products which will no be controlled?

Yes: CCP. Sensitive raw material, high level of control required. / *No:* Proceed to next raw material



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