

Horseflesh Fresh Sausages Food and Biological Value

S. UALIEV, M. FASLIEV, A. FICHTNER and E. TULEUOV

Technological Institute of Meat and Milk Industry, Glinka Street 49, Semipalatinsk 490050, USSR

SUMMARY: Horseflesh fresh sausage production technology that preserve biologically active compounds has been developed and tested. Soft dry sausages are ready to eat in 25 days and in 40 days hard dry sausages are. Hard dry sausage colour is darker than soft dry sausages colour is. Cut colour, aroma and flavor are up to the standard. Food and biological value data testify to the fact that sausages possess a high content of polyeicosanic acids, vitamins, minerals, microelements and a number of other compounds that form biochemical compounds which are essential in the active complexes formation and promote body metabolism.

INTRODUCTION: There are over 30 sorts of the uncooked smoked sausage and a number of sorts of the uncooked cured sausage produced in the USSR. They are cooked mainly from pork, beef and mutton. The aim of this investigation was to develop horseflesh sausage production technology. Suggestions to use the horseflesh in uncooked smoked sausage are few, though it has low stability value pH (5.6-5.7) when compared with pork and beef value pH (5.5-6.5) and, thus, it may be considered to be a valuable sausage raw. Horseflesh biological, physical, chemical and some other characteristics show it to be a high food and biological value product, that can be used for the treatment of obesity, atherosclerosis, renal diseases, etc. The problem is how to preserve these valuable properties in processing. To solve it fresh sausages production technology and recipes involving bacterial preparation with different moisture content have been developed.

MATERIALS and METHODS: Fresh horseflesh sausage containing 30% of fat (sausage 1) and horseflesh and pork mixed sausage (sausage 2) have been investigated. In the experiment the raw was cooled till -1 - -3 degrees C and processed on Kremmer-Grebe line, then it was filled into casings. The sausages were shrunk and smoked at 18-22 degrees C, moisture being 80-75%. Shrinkage lasted 48 hours, smoking took 24-48 hours. The sausages were dried at 13-15 degrees C and air moisture was 75%. Soft sausage production cycle takes 25 days and 40 days are required for hard sausages. The latest methods were used to test physical, chemical and biological properties of the processed product.

RESULTS and DISCUSSION: Edible foods biological value is appraised by its aminoacids content. Table 1 shows fresh sausage aminoacid content (gr per 100gr)

Aminoacids	Table 1		
	Fresh pork sausage	Fresh horseflesh sausage	Horseflesh and pork mixed sausage
Isoleucin	4.71	4.83	4.45
Leicin	7.4	7.82	8.21

Lysine	11.6	11.8	11.7
Methionine+cistin	3.32	2.48	2.59
Phenylamin+thyrosin	7.53	7.26	7.41
Threonine	3.72	3.84	3.62
Tryptophan	1.56	1.52	1.8
Valin	3.05	3.21	4.0

The data analysis has shown that there is no essential differences in the amino acid content of the raw and its final products but for the methionine: it is less by 15%. Fresh sausage lipids are found to contain 25 fatty acids, of which 60.1% are eicosanoic ones. Among saturated fatty acids (41.4%) there are mainly myristic, palmitinic and stearic acids. Horseflesh fresh sausage meat polyeicosanoic acids content is high- about 14.8%. Fatty acid content of the lipid fraction of the sausages doesnt change in the process of smoking.

Fresh Sausage Fatty Acids Content (%)

Table 2

Acids	Fresh sausage meat	Fresh smoked horse- flesh sausage	Fresh smoked horseflesh and pork sausage
lauric	0.1	0.2	0.3
myristic	4.9	4.4	4.8
palmitinic	26.8	24.8	26.2
stearic	12.1	14.1	12.2
oleinic	40.4	43.8	44.2
linolic	10.8	8.6	7.2
linolenic	2.7	2.3	1.5
arachidonic	0.9	0.5	0.3

Vitamins and minerals are present as well.

Fresh Sausage Vitamin and Mineral Content

Table 3

Vitamins, minerals mg % mg	Fresh sausage meat	Horseflesh frsh sausage	Horseflesh and pork fresh sausage
B1	0.69	0.56	0.56
B2	0.48	0.29	0.21
PP	1.33	0.86	0.84
A	0.36	0.21	0.18
E	0.43	0.67	0.24
Calcium	10	9.6	9.4
Phosphorus	168	165.6	167.1
Magnesium	25	29	26

Iron	4160.5	4236.1	4252.0
Copper	206.2	202.4	208.3
Manganese	30.1	30.5	30.6
Zinc	6185	6096	6100
Lead	62.1	62.2	60.4
Cobalt	30.3	30.1	30.6
Cadmium	9.1	9.1	8.9

Horseflesh is noted for a high content of organic acids, which promote body metabolism and stimulate gastric organs. Table 4 shows aminoacids that have a part in forming the flavor and colour of the product.

Organic acids content mg per 100 gr

Table 4

Organic acids sausage raw fresh horseflesh fresh horseflesh and pork

	sausage		sausage
total amount	0.418	0.738	0.606
lactic	0.062	0.253	0.158
pyroracemic	0.025	0.034	0.035
oxalic	0.035	0.056	0.049
malonic	0.09	0.092	0.096
succinic	0.041	0.052	0.048
glutaric	0.022	0.005	0.004
fumaric	0.004	0.014	0.018
oxalicacetic	0.046	-	-
malic	0.019	0.036	0.028
ketoglutaric	0.054	0.108	0.112
aconite	0.054	-	-
citric	0.067	0.088	0.058

CONCLUSIONS: Taking into account the above given data we may conclude that there are 300 C in 150 gr of of horseflesh fresh sausage which contribute to the daily supply of the body 85% of protein, 46% of fat, 36.7% of organic acids, 16-18% of vitamins, 64% of iron, 80% of zinc, 45% of cobalt. The technology and recipe obtained possess high biological value, low caloricity, high protein content, optimum aminoacid and fatty acid content.