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Research on raw material correlation and soy protein derivatives used for meat preparations in membrane

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Abstract. Since the Romanian literature is pretty low quality data on the influence of hygienic quality of raw materials and preparations of meat, in our research we intend to pursue these issues in pork and beef quality I and II. Bacterial load of raw meat products brought in meat technology varies depending on its quality. Thus, the total number is 44,640 germs / g beef I and 86,640 / g beef II. The number of coliform bacteria is 329 / g beef I and 420 / g beef II. Protein derivatives stands at a higher bacterial load in soybean meal (5.04 million / g) than in texturate protein (4,000 / g). Number of sporulated aerobic germs in soy flour is 4.115 million / g and in the protein texture 1,000 / g. In soy flour the recorded number of coagulase-positive staphylococci is 1,250 / g and the number of sulphite-reducing clostridium is 250 / g, compared to the number of coagulase-positive staphylococci observed in proteic texturate, 420 / g, and sulphite-reducing clostridium which is absent, but it is found in texture to soy meal micelium a greater number (161,000 / g). High value bacterial load in the emulsion impose protein derivatives obtained from them to cool as soon as possible after production to prevent multiplication of microorganisms.
Key words: raw material, soy protein, meat preparations in membrane.

Rezumat. Întrucât literatura de specialitate din ţara noastră este destul de săracă în date privind influenţa calităţii igienice a materiilor prime şi asupra calităţii preparatelor de carne, în cercetările noastre ne-am propus să urmărim aceste aspecte la carnea de porc şi carnea de vită calitatea I şi a II-a. Încărcătura bacteriană a cărnii materie primă introdusă în tehnologia produselor de carne variază în funcţie de calitatea acesteia. Astfel, numărul total de germeni este de 44.640/g la carnea de vită I şi 86.640/g la carnea de vită II. Numărul de bacterii coliforme este de 329/g la carnea de vită I şi de 420/g la carnea de vită II. La derivatele proteice se remarcă o încărcătură bacteriană mai mare la făina de soia (5.040.000/g) decât la texturatul proteic (4.000/g). Numărul de germeni aerobi sporulaţi la făina de soia este de 4.115.000/g, iar la texturatul proteic de 1.000/g. La făina de soia se înregistrează şi un număr mare de stafilococi coagulazo-pozitivi, care este de (1.250/g), şi de clostridii sulfito-reducătoare (250/g) comparativ cu texturatul proteic la care numărul de stafilococi coagulazo-pozitivi este de 420/g, iar clostridiile sulfito-reducătoare sunt absente. La texturat se constată însă faţă de făina de soia un număr mai mare de miceţi (161.000/g). Valorile ridicate ale încărcăturii bacteriene la derivatele proteice impun ca emulsia obţinută din acestea să se răcească cât mai repede după obţinere, pentru a împiedica multiplicarea microorganismelor.
Cuvinte cheie: materie primă, proteină de soia, preparate din carne în membrane.

Introduction. Hygienic quality of meat preparations is influenced largely by the bacterial load of raw and auxiliary materials and protein derivatives used in technology. Unsporulate bacterial microflora is destroyed by heat treatment temperature preparations, but the sporulated can resist and produce a series of changes as part hygiene compromising product.

Meats with low nutritional value used to obtain some sort of meat, bringing the final product varied and numerous bacterial load. Also a very high intake of microorganisms in processed meat substitutes can play traditional spices, especially aerobical bacteria sporulated, sulphite-reducing and micelium clostridium.

Paper Aim. Since the literature of our country is pretty low quality data on the influence of hygienic quality of raw materials and preparations of meat, in our research we intend to pursue these issues in pork and beef quality I and II.

Materials and Method. Were examined microbiologically 50 raw meat samples (pork thing, first quality beef meat, beef quality II) and samples derived vegetable protein (textured soy protein and flour). Raw meat samples were collected in batches and were examined within 6 hours of harvesting.

As to the samples of meat, sensory appearance was appreciated directly and by section, consistency, color, smell etc. Protein derivatives were appreciated in appearance, color, odor, possible impurities, characteristic flavor, harvest and storage conditions.

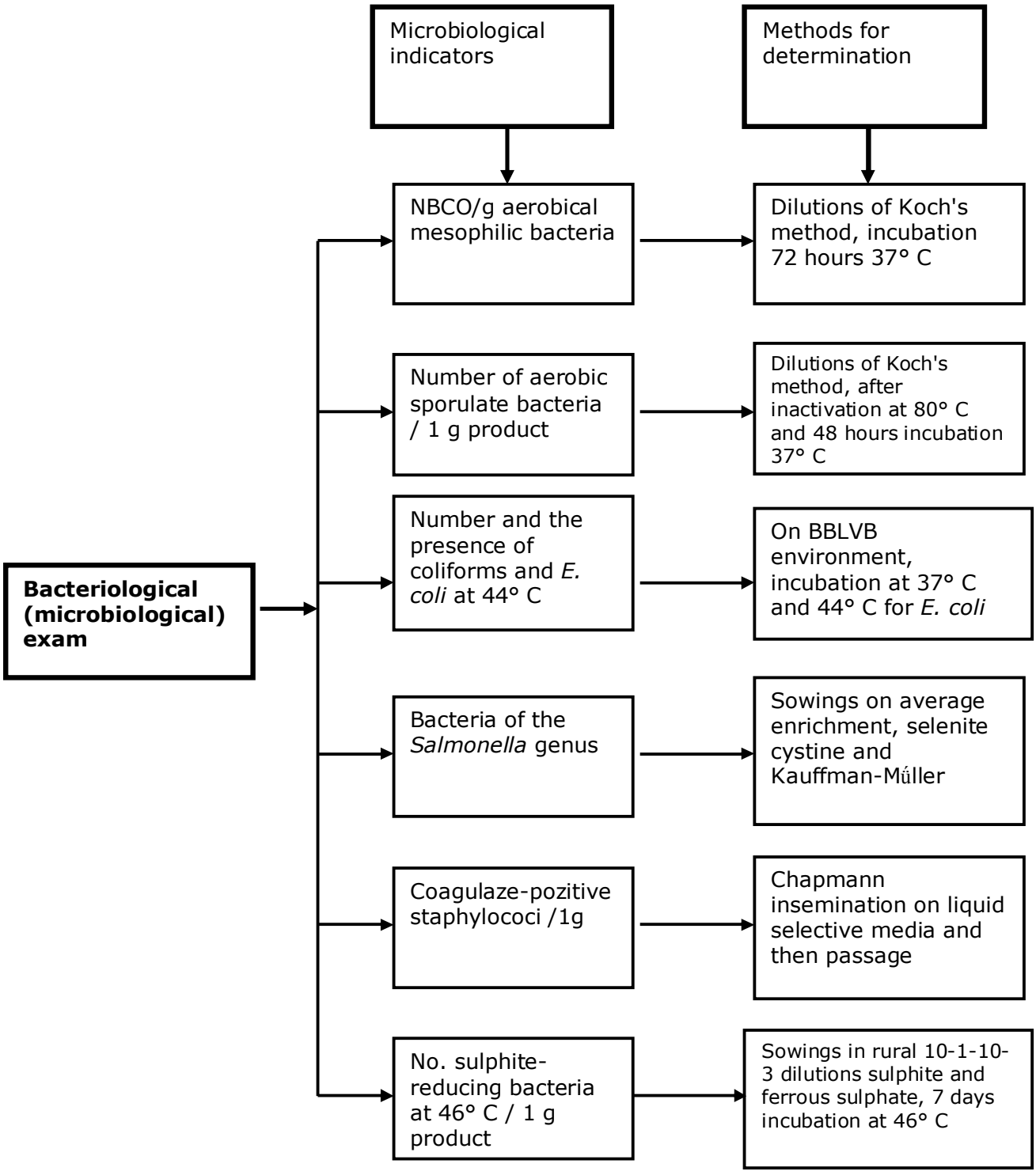

Figure 1. Bacteriological examination followed in this study.

Table 1

Bacteriological charge of meat row material
n=50

Specification	Total number of germs/g product				Coliforme bacteria number/g product			
	$\bar{x}$	±	$s\bar{x}$	V%	$\bar{x}$	±	$s\bar{x}$	V%
Pork meat in work	74,300	±	2,060.1	6.21	366	±	261.02	159.75
Beaf meat I	44,640	±	19,208.6	96.36	329	±	195.20	132.92
Beaf meat II	86,640	±	10,903.7	146.78	420	±	254.86	135.93

Table 2

Bacteriological charge of soy proteic derivatives
n=10

Specification	Total number of germs/g	Aerobical sporulated	Coliforme bacteria number/g	*E.coli*	Staphylococcus coagulaze-pozitive/g	Clostridii sulfite-reductional/g	Micelium/g
	$\bar{x}$	$\bar{x}$	$\bar{x}$	$\bar{x}$	$\bar{x}$	$\bar{x}$	$\bar{x}$
Proteic texture	4.000	1.000	-	-	420	absent	161.000
Soy flour	5.040.000	4.115.000	9	-	1.250	250	121.800

The microbiological examination (performed according to the scheme of Figure 1) was intended to observe (/ g product): the total number of germs, aerobic sporulated germs, coliforms and presence of *E. coli*, coagulase-positive staphylococci, sulphite-reducing anaerobic bacteria and germs of the genus *Salmonella* (analyzing 25 g product). Measurements were made by the methodology prescribed by all the official regulations in force (see for details Stănescu et al 1971-1975; Stănescu et al 1977, 1978; Bărzoi 1985; Ieniștea 1985; Soriano et al 2002; Filimon et al 2010 and the national legislation cited therein; The European Food Safety Authority 2006).

Results and Discussion

Bacteriological examination results were statistically processed, establishing the lead media and standard rate variability and significance test (t), (see Table 1 and Table 2 for details).

Bacteriological examination of meat raw material (see Table 1) shows that pork has the total number of 74,300 germs / g product, and the number of 366 coliforms / g product. In total beef the quality varies, germ being 44,640 / g beef product first quality and 86 640 / g in beef second quality and the number of coliform bacteria varied between 329 (beef I) and 420 / g product (beef II).

Proteic derivatives (see Table 2) show a relatively high bacterial load, especially for soybean meal, the total number of germs is 5.04 million / g product and the sporulated aerobic germs is 4.115 million / g product. In these proteic derivatives is notable a considerable number of coagulase-positive staphylococci (1250 / g), sulphite-reducing clostridium (250 / g) and micelium (121,800 / g). In protein texture bacterial load is much lower than in soybean meal, except number of micelium that this product is higher (161,000 / g). High bacterial load in soy meal emulsion cooling requires to be done after obtaining the earliest to prevent the proliferation of various germs before being introduced into the composition of meat preparations.

Conclusions

Bacterial load of raw meat products brought in meat technology varies depending on its quality. Thus, the total number is 44,640 germs / g beef I and 86,640 / g beef II. The number of coliform bacteria is 329 / g beef I and 420 / g beef II. Protein derivatives stands at a higher bacterial load in soybean meal (5.04 million / g) than in texturate protein (4,000 / g). Number of sporulated aerobic germs in soy flour is 4.115 million / g and in the protein texture 1,000 / g. In soy flour the recorded number of coagulase-positive staphylococci is 1,250 / g and the number of sulphite-reducing clostridium is 250 / g, compared to the number of coagulase-positive staphylococci observed in proteic texturate, 420 / g, and sulphite-reducing clostridium which is absent, but it is found in texture to soy meal micelium a greater number (161,000 / g). High value bacterial load in the emulsion impose protein derivatives obtained from them to cool as soon as possible after production to prevent multiplication of microorganisms.

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