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COUNT AND SPECIES COMPOSITION OF MICROORGANISMS ISOLATED FROM THE ENVIRONMENT , RAW AND AUXILIARY MATERIALS IN THE PRODUCTION OF STERILIZED CANNED MEAT PRODUCTS.

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The qua lity and storage life of meat products is influenced by the sterilization effect of the thermal regimes. Some authors(1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22, 23,24,25,26,27,28,29) study the link between the quantity and types of microorganisms in the environment, the raw and auxilliry materials and the residual microflora in the canned sterilized meat products. Most of them,(2,3,11 ,14,15,25,26,27,28,29)confirm . that the quantity and type of the microorganisms is dependent on the personal hygiene of the workers, the microbial contamination of the raw and auxilliary materials, the hygiene status of the work premises, the degree of mechanisation and automation of the processes, the in-factory transportation, and other factors acting from the moment of handling the animals for slaughter to the stora ge of the ready canned meat products.

In the present study we wanted to establish the total count and species types of the microorganisms in the environment, the raw and auxilliary materials and the produced sterilized meat products, following and trying to elucidate the relation between themselves and their influence on the quality of the ready product.

Material and Methods

The materials for microbiological study we took from the clo

se environment, the raw and auxilliary materials and the ready sterilized products. For estabilishing the total count of the microorganisms, we used the standard method and nutrative media. For isolation and identification of the prevailing types microoganisms, we worked with the generally approved microbiological, cultural and biochemical studies of the isolated strains, which we identified to type after Krasilnikov. Paralelly we searched for Salmonella.

Results

1. Total count and types of microorganisms in the environment.

The sudies of the environment include microbiological investigations of materials taken from the premises, the work places, tables, untensils, conveyors, machines, implements, inventory, water, air, work clothes aprons, knives, hands of workers and others. The studies were followed in strictly hygienic and technological regime of the production. Total count of the investigated objects in the environment during working hours attains 3.430.000. Highest microbial contamination show the aprons; hands of the workers, the knives the boning boards and the conveyors, total count of which is in the limits of 870.000 to 3.430.000. This is due to permanent contact with the raw and auxilliary materials during the processing.

The isolated microorganisms, prevlent in the environment we have identified to type after Krasilnikov: Bac.mesentericus Trevisan, 1886. Bac.mesentericus panis viscosi II.Vogel, 1897. Bac.cereus Frandand, 1887. n.comb. Bac.megatherium.De Bary 1884. Bac.circulans Jordan Lüderitz 1889. Bac. subtilis (Ehrenberg) Cohn,1872 Bac.circulans Jordan, 1890 n.comb. Bac.coccoidens (Panmini) Migule

1 900 n.comb. Bac.idosus (Burchard),1897. Micr.granulatus Weis, 1902. Micr.albus (Rosenb). Micr.gummosus, Happ.1893(no Migula) 1900. Micr.subtilis Migula 1900. Micr.pallens Henrici,1894(varicty of Micr.albicans). Bact.sulfureum (Rubentschik).
During the microbiological investigations we have not discovered Salmonellae.

2. Total count of microorganisms in the raw materials.

The microbiological studies of the raw materials include samples of pig, beef and calf meat, taken in the moment of the carcass dressing or in the moment when they are received from other slaughter plants or storage, following all stages of their processing. The microbiological count of all types of boned meat is in the limits of 2.280 to 83.700.000 Highest is the count of microorganisms in meat, received from other slaughter plants or import. Bacterial count in the meat after boning, sorting,salting and machine processing is also different, and is comprised in the limits of 14.400 to 235.000.000

The isolated and most often encountered microorganisms in the boned, natural, processed and sorted meats we identified to type after Krasilnikov as follows: Bac.megatherium . De Bary,1884, 1890 n.comb. Bac. idosus Burchard, 1897. Bac. solidus Luderitz. 1889. Bac. subcuticularis(Tataroff) Migula, 1900 n.comb. Micr.albatus, Kern, 1897. Micr.globosus Kern 1897. Micr.granulatus Weiss 1902. Micr.albus (Rosenb) Buchanan,1911. Micr.oligonitrophilus n.s.Micr. subtilis Migula 1900. Bact.sulfureum (Rubentschik). Psendobact. subluteum (Dobrz) n.comb (Bact.subluteum Migula 1900).
No evidence of Salmonella was present.

3. Total count and types of microorganisms in the auxilliary

materials.

Samples from the auxilliary materials included spices, adatives, salts, gelatine, covering broth, packings and others. The count of microorganisms in the different auxilliary materials is from 230 to 34.000.000 Highest is the content of cmicroorganisms in the spices, but lowest it is in the tin packing materials.

The isolat prevalent microorganisms after identification were classified as follows: Bac.cereus Frandand, 1887 n.comb., Bac. megatherium De Bary,1884. Bac.mesentericus Trevisan,1886. Bac. mesentericus panis viscosi II. Vogel, 1897. Bac.mesentericus, Chester,1901. Bac.subtilis (Ehrenberg) Cohn 1872. Bac.circulans Jordan 1890 n.comb. Bac.coccoidens (Pansini) Migule 1900, n.comb. Bac.idosus Burchard,1897. Micr.gummosus, Happ 1893 (no Migula, 1900) Emmond. Micr.globosus Kern,1897. Micr.pallens Henrici 1894. (varicty of Micr.albicans).Micr.candiduschn 1872. Micr.tetragenus, gaffky 1883.

With the auxilliary materials Salmonella was negative too.

4. Residual microflora of the sterilized meat products.

From the sudied lots canned products in one tin per each of three lots, we discovered non- sterility, and in two cases from one lot colonies in the limit of 83 microorganisms per gram. The rest of the cans from all lots did not show any colonies at all.

The isolated microorganisms in the canned meat after sterilization we identified as : Bac.subtilis (Ehrenberg) Cohn 1872. Bac. mesentericus Trevisan,1886. Micr.tetragenus, Gaffky 1883, Micr. candidus.

Here too no Salmonella was present.

Conclusions

The results from these studies confirm, that total count and types of microorganisms in the nvironment, raw and auxilliary materials and the residual microflora in the sterilized canned meats are in direct relation between them selves which is further proved, with the isolation of the same types of microorganisms from them during the different stages of the meat processing. The total count and types of the microorganisms influence the quality of the ready products, which in turn shows the need for strict hygienic regime during the whole technological process in production of canned sterilized meat products.

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