MONITORING THE BACTERIAL POPULATION DYNAMICS DURING FERMENTATION OF ARTISAN SERBIAN SAUSAGES ("PETROVSKIE KLOBÁSE")

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Background: The spontaneous fermentation of dry sausages is a complex process characterized by deep changes on the principal meat components, resulting in the production of specific taste and aroma. Ripening of fermented sausages involves the participation of Lactic Acid Bacteria (LAB), coagulase negative cocci, and, less importantly, yeasts and moulds.

Objectives: The aim of this preliminary study was to use microbiological counts to monitor the dynamic changes in the populations responsible for natural fermentation of an artisan Serbian sausages ("Petrovske klobáse") at four different stages of the ripening process.

Methods: The sausages were produced (grind pork meat and fat, hot pepper, salt, garlic, caraway and sucrose) in household in municipal Bački Petrovac (Serbia) under artisan conditions without the use of starter cultures. Duplicate samples of sausages were collected at start of the ripening process and at 2, 4, and 6 days.

Microbiological counts of mesophilic aerobic bacteria (on Nutrition agar) and LAB (on MRS and MSE agar) were done by plate count method.

Results:
1. Sausages fermentation was characterized by a rapid increase in the number of LAB which increased from an initial value of $10^3$ CFU g$^{-1}$ to $10^7$ CFU g$^{-1}$ within the first 6 days.
2. The aerobic mesophilic bacterial counts were $10^5$ CFU g$^{-1}$ at the starting time, and the highest number ($10^7$ CFU g$^{-1}$) occurred at 6 days.
3. The increased population of lactic acid bacteria grown during fermentation caused the slightly pH reduction, from initial 5.4 to 5.2 at 6 days.

Conclusions: LAB dominated the microflora during ripening of sausages, whereas counts of total aerobic bacteria were slightly lower than LAB at the 6 days of fermentation process. The further identification of dominant communities present in this artisanal fermented sausage can help in the selection of starter cultures consisting in well adapted strains to the particular production technology.