

TITLE: DEVELOPMENT OF FRESH PORK SAUSAGE WITH *Lactobacillus sakei*: QUALITY CHARACTERISTICS AND ANTIMICROBIAL POTENTIAL

AUTHORS: CASAGRANDE, M.; GELINSKI, J.M.L.N.; MEGIOLARO, F.; OLIVEIRA, T.P. BARATTO, C.M.

ABSTRACT:

The use of lactic acid bacteria that produce antagonistic substances constitutes an important technological barrier in the inhibition or death of pathogens or spoilage. In this study three species of lactic bacteria were isolated from fermented meat product and evaluated for their technological properties and probiotic potential for elaboration of a new meat product. The isolates identified (biochemical and/or molecular analysis) were: *Lactobacillus sakei*, *Pediococcus pentosaceus* and *Lactococcus plantarum*. They were evaluated for tolerance to extremes of pH, temperature and NaCl by the production of diacetyl and lactic acid. Antimicrobial resistance was tested (Disc diffusion test) as well as the ability to produce inhibitory substances (Well diffusion test) to the pathogens: *Listeria monocytogenes* Scott A, *Enterococcus faecalis* and *Staphylococcus aureus*. The isolates presented resistance to different levels of NaCl and extreme conditions of temperature and pH. All lactic bacteria inhibited the pathogens. *L. sakei* was chosen to compose a meat pork sausage, considering that it presented a set of results more favorable in technological terms. The meat product with low sodium content was elaborated with boned swine meat and pork; fat; Isolated soy protein; Garlic, black pepper, nutmeg; Sugar, curing salts and sodium erythorbate. Experimental treatment groups with meat product: Group I: sausage without addition of microbial cultures - Control Group; Group II: sausage with *Lb. sakei*; Group III: sausage with *S. enterica* Cholearaesuis; Group IV: sausage with: *Lb. sakei* + *S. Cholearaesuis*. All groups (before inocula) were evaluated for hygienic conditions. The behavior of the autochthonous microbiota and *S. Cholearaesuis* was evaluated by counting CFU.g⁻¹ viable in agar plates after 24 hours and 7 days of storage at -10°C. Samples of sausage without addition of the pathogen but with *Lb. sakei* have met microbiological and physicochemical standards. The sensorial profile of the product was evaluated by comparison between groups I and II. For the groups III and IV, the pathogen had a mean reduction of 1.64 log cycles when in the presence of *Lb. sakei* over 7 days of storage. In the absence of the lactic culture, the pathogen maintained a count of 10³CFU.g⁻¹. *Lb. sakei* did not cause reduction of autochthonous microbiota. The data confirm that the reduction of the pathogen constituted an important technological barrier provided by the lactic culture, giving greater food safety.

Keywords: Meat product, hurdle technology, food safety.

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