

TITLE: MICROORGANISM CONTENT IN THE THERMAL PROCESS OF THE PROTEIN CONCENTRATE OF MILK SERUM

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ABSTRACT:

The thermal process with the use of high temperatures is one of the most used methods for the conservation of foods, since it consists in reducing or eliminating deteriorating and pathogenic microorganisms, without the quality and functional properties are altered. However, in products such as whey protein concentrate (WPC) the functional properties of proteins are impaired by high temperatures, denaturation occurring. In this case, conventional pasteurization should not be used, only the thermization process consisting of heating between 60°C and 65°C for 15 seconds. Thus, the present work aims to evaluate the efficiency of the thermization process in reducing the microbial load of WPC 60% in a dairy concentrate industry. During the month of March 2016, two WPC productions at 60% protein were monitored, and the samples were collected during and at the end of production. Resulting in four collections in the different stages of the process: raw material, after ultrafiltration, after the thermization and in the finished product after the spray drying. All samples were analyzed for counts of mesophiles, *Enterobacteriaceae*, *Staphylococcus aureus* and *Bacillus cereus* by direct counting of colonies in plaques, and total and thermotolerant coliforms by the most probable number technique. In the final product we also performed research on *Salmonella sp.*, *Listeria monocytogenes*, *Clostridium sulphite* reducers and *Escherichia coli*. The results were expressed as colony forming unit per gram (CFU/g). It was verified that in both the productions and during the productive process there was a reduction in the counts of all the microorganisms analyzed. The results indicated absence of *Salmonella*, *L. monocytogenes*, *Clostridium* and *E. coli* in the final product. Based on the calculation of the reduction efficiency of microorganisms, the decrease was around 100% for all the tests. This demonstrates that thermization was efficient in reducing indicator microorganisms and eliminating the pathogens in the final product. In general, the products presented acceptable microbiological standards for consumption.

Keywords: denaturation, pasteurization, protein concentration, thermization