Title: MICROBIOLOGICAL EVALUATION OF SOURDOUGH BREAD

Authors Stefanello, Raquel F.[1]; Fries, Leadir L. M.[1] ; Machado, Raquel F. C. [1]

Institution [1]Department of Food Technology, UFSM – Federal University of Santa Maria – (1000Avenue Roraima, Santa Maria, RS, 97105-900, Brazil)

Abstract:
A natural yeast is generally composed of a mixture of wheat flour and water, fermented with yeast and lactic acid bacteria. The lyophilization process is widely used to preserve this type of yeast as it keeps the viability of these micro-organisms. This paper aims to evaluate the antimicrobial activity of lyophilized natural yeast in bread like sourdough and compare it with commercial yeast. The breads were elaborated by indirect fermentation, that is, first the yeast is mixed with a small quantity of wheat flour, sugar and water to form a pre-yeast. A control bread and sourdough bread type were manufactured. The control breads were produced from 70% of white wheat flour, 30% whole wheat flour, sugar (4.5%), palm fat (1.85%), salt (1.25%) and commercial instantly biological yeast (1.0%). The sourdough breads were prepared accordingly to the same formulation above, but were used 2.5% of lyophilized natural yeast. After cooling the breads, they were packed and stored at room temperature for 24 days for the other analysis. In the breads, the water activity (aw) was identified and microbiological analysis of mesophilic aerobic microorganisms and of molds and yeasts were made during the 24 days of storage. The water activity values (aw) as for control as for sourdough breads, in 24 days of storage were between 0.92 and 0.94 showing that both treatments were susceptible to microbiological growth due to the high availability of water. Breads made with lyophilized natural yeast showed strong antimicrobial activity because its microbiological counts performed during the 24 days of storage were always lower than those obtained with the breads made with commercial instantly biological yeast (control). In the eighth day of storage was already possible to observe deterioration caused by molds (4.58 log CFU. g-1) in the control breads and sourdough breads were maintained stable from a microbiological point of view (1.76 log CFU.g -1). From the results of this paper we can affirm that the use of lyophilized natural yeast in fabrication of breads promotes inhibition of the growth of microorganisms, mesophilic aerobic and of molds and yeasts, showing that it can be a natural alternative of preservation. The sourdough breads are less susceptible to the attack of microorganisms because the lyophilized natural yeast have a strong antimicrobial activity that can increase the shelf life of bread and also replace chemical preservatives used in its preservation.

Key-words: antimicrobial activity, yeast, sourdough.

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