Study of transglutaminase application in fermented dairy beverage with high whey content

Douglas dos Santos FARIA, Cynthia JURKIEWICZ, Eliana Paula RIBEIRO

Maua Institute of Technology, São Caetano do Sul, SP, Brazil. Email: cynthia@maua.br; elianaribeiro@maua.br.

ABSTRACT

The objective of this study was to evaluate the effects of the application of microbial transglutaminase enzyme containing glutathione (MTG) with different concentrations and incubation temperatures in the production of reconstituted fermented dairy beverage and optimization of the enzyme usage conditions. For the beverage production whole milk power and whey powder was used with the equivalent to 40% of liquid whey. The enzyme was added and incubated before the usual heating step for these products and inactivated by it. The dairy beverages elaborated with and without enzyme treatment were compared through physical-chemical analyses and sensory evaluation. In duplicate, 11 trials plus de control with no enzyme treatment were run with different MTG concentrations and with different temperatures of enzyme treatment. It was used the central composite design to verify the best concentrations and incubation temperatures to have the highest viscosities and the lowest syneresis indexes. The results showed that beverages with enzyme concentrations equal or higher than 0.006% (w/w) with incubation temperatures equal or higher than 30 ºC produced significant viscosity increase compared to the control, being the best combination 0.034% (w/w) of enzyme preparation incubated at 40 ºC that presented a viscosity 81.3% higher than the control beverage. After 21 and 28 days of storage, all beverages presented syneresis indexes lower than the control and no difference between the treated samples. With respect to the sensory evaluation, acceptability and preference tests were conducted and the results showed a preference 77% for the enzyme treated beverage.

Keywords: Fermented dairy beverage. Transglutaminase. Viscosity. Syneresis.