COMPARATIVE ANALYSIS OF MILLING TECHNOLOGIES IN DARK AND MILK COCOA TOPPING PRODUCTION FOR ICE CREAM

Tijana Popović[1], Milica Stožinić[2], Ivana Lončarević[2], Biljana Pajin[2], Danica Zarić[3], Ivana Nikolić[2], Jovana Petrović[2]

[1]Barry Callebaut Manufacturing South East Europe d.o.o., Zrenjaninski put 32, 21000 Novi Sad, Serbia
[2]Faculty of Technology Novi Sad, University of Novi Sad, Bulevar cara Lazara 1, 21000 Novi Sad, Serbia
[3]Innovation Centre of the Faculty of Technology and Metallurgy, University of Belgrade, Karnegijeva 4, Belgrade, Serbia
e-mail: tijana.popovic.96.tp@gmail.com

ABSTRACT

Chocolate and cocoa toppings are widely used for confectionery products. Toppings used for ice creams contain higher fat content (about 40-60%) to ensure a greater flow to cover the whole product. The dark cocoa topping consists of cocoa and sugar powder distributed in vegetable fat, while cocoa topping with the added 7% non-fat milk fraction is regarded as a milk cocoa topping. This research aimed to determine and compare the impact of the ball mill, and five-roll mill and conching used for the production of dark and milk cocoa toppings regarding the particle size distribution, rheology properties and content of moisture, sucrose, fat and lactose. The obtained results showed that the volume-weighted mean parameter D (4,3) was lower in the samples produced in a ball mill. Additionally, the viscosity, linear and Casson, slightly increased in samples produced in a ball mill except for the milk cocoa topping which had 0.55 fold higher value of linear viscosity compared to the sample produced using a five-roll mill and conching. Regarding the results of NIR spectroscopy, it was found that the samples produced in a ball mill showed higher values of moisture, but lower values of sucrose, lactose and fat.

Keywords: cocoa topping, ball mill, five-roll mill, rheology, particle size distribution