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Revealing the effects of heat-treated liquid egg on the rheological and quality characteristics of sponge cake

Egg is the main ingredient in cake production due to its functional properties in the formation of foam. Recently, use of liquid egg (LE) instead of shell egg has been increased because of its ease of use and microbial quality. However, use of LE may degrade the physical quality of cake, due to pasteurization process during LE production. Heat treatment may cause a destructive effect on functional properties of egg proteins. The aim of the present study was to reveal the effects of heat-treated liquid whole egg (LWE) on cake batter rheology and quality characteristics of baked cakes. LWE was pasteurized at different levels which were 60-68°C for 2 and 5 mins. Cake batter and baked cakes were prepared using both untreated and treated LWE, and rheological properties and quality characteristics (moisture loss, color, porosity, texture, and specific volume) were measured. Flow behavior index (n) and consistency index (K) of the control group were found significantly different from the treated LWE cake batters. Heat treatment of LWE showed an unfavorable effect on porosity (decrease from 59% to 49%), hardness (increase from 1.1 to 1.4 N), and specific volume (decrease from 3.6 to 3.4 cm³/g) of the baked cakes because of having less volume and a stiffer structure of heat-treated LWE batter. As a result, heat treatment process of LWE generated a batter with less air bubbles, and thus harder and less fluffy baked cakes were formed. In conclusion, the unfavorable effects of heat-treated LWE on batter rheology and cake quality were demonstrated.

Biography

Reyhan Selin Uysal has completed her PhD from Istanbul Gedik University, in the Department of Food Engineering. She has published seven papers in reputed journals.

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