EFFECTS OF SUGAR REDUCTION IN THE INTERNAL STRUCTURE FORMATION OF SPONGE CAKES

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The consumption of cakes with calorie reduction is growing, but it has faced challenges to be overcome in the structure formation when sugar is replaced by alternative sweeteners, gums, thickeners and bulking agents. The present study investigated the internal characteristics of a sponge cake with sugar and with an increasing replacing mixture of sucralose (1%) in xanthan gum (1.5%) solution. Apparent viscosity determinations (Brookfield viscometer) and thermograms by differential scanning calorimetry (DSC) were obtained from the batters. After baking, specific volume determinations (AACC,2000) and crumb cell counts (Wilderjans et al. (2008)) were done in the cakes. As the sugar content was replaced (from 10.00 to 52.17%), specific volume, crumb counting cells, apparent viscosity and $T_o$ in dscgrams were reduced from 1.94 to 0.7 ml / g; 36.2 to 4.0 cells / cm² ; 631.40 to 337.56 cP and 75,20 to 58,0ºC, respectively, showing clearly that sugar replacement contribute strongly to malformations (holes) in the internal structure of the cake. From the data obtained, it was concluded that all parameters studied are important to characterize sponge cake structure with sugar reduction and the presence of sucralose seems to play an important role in the cake internal structure formation during baking, reducing the gelatinization temperature of starch, accelerating the process of coalescence of bubbles dispersed in the batter resulting in hole formation.