Effect of oven temperature profile and different baking conditions on final cake quality

Abstract

This study discusses the effect of airflow on oven temperature profiles, the internal cake temperature and the final cake quality. It was found that the presence of airflow reduced the oscillation in the oven temperature profile from 12.98–30.27% to 3.17–4.02%. The bottom of the oven chamber experienced the greatest reduction in temperature oscillation in the presence of airflow. During the second stage of baking with airflow, the heating rate was increased from 5.07 to 7.52 °C min−1 and 8.35 °C min−1 to the increase of the baking temperature from 160 to 170 °C and 180 °C, respectively. The cake volume expansion rate was also increased 5–10% during second stage when baking with airflow condition. The cakes baked in the presence of airflow had a more porous crumb texture and lower moisture content compared to the cakes baked without airflow.

Keyword: Baking conditions; Cake baking; Oven; Oven temperature profile