

Effect of Deep Fat Frying on the Mass Transfer and Color Changes of Arepa Con Huevo

Abstract

Objectives: To study the effect of deep fat frying on the mass transfer and color changes of ArepaCon Huevo. **Methods:** The product was prepared as a round plate (diameter: 10 cm and thickness: 2.5 cm). Palm oil was used in a 7 L fryer at 170, 180 °C and 190°C under a ratio of 250 g sample/L oil. **Findings:** Moisture content decreased as time and temperature increased ($p < 0.05$). D_a coefficients in increased order of temperature were: $(1.75 \pm 0.01, 3.56 \pm 0.08 \text{ and } 5.03 \pm 0.06 \times 10^{-7}) \text{ m}^2/\text{s}$, with k_c values of $(4.26 \pm 0.31, 6.31 \pm 0.45 \text{ y } 9.58 \pm 0.81) \text{ m/s}$. The activation energy calculated with Arrhenius equation was 63.96 kJ/mol. The rate of oil absorption was higher at low temperatures, with values of $(1.28 \pm 0.06, 0.77 \pm 0.02 \text{ and } 0.67 \pm 0.04 \times 10^{-3}) \text{ s}^{-1}$ and an activation energy of 50.66 kJ/mol. Lightness (L^*) decreased with increasing factors, varying from 75.02 ± 3.42 (before frying) to 46.82 ± 2.28 at 190 °C. This was attributed to the non-enzymatic browning at high temperatures. **Application:** Understand mass transfer parameter is important in order to optimize the frying processing of ArepaCon Huevo.