

Effect of palm-based shortenings of various melting ranges as animal fat replacers on the physicochemical properties and emulsion stability of chicken meat emulsion

ABSTRACT

This study evaluated the effects of palm shortenings (PS) with varying melting ranges (MR) on the physicochemical, emulsion stability, rheological, thermal, textural, and microtextural properties of chicken meat emulsions. Six emulsions were developed: control (chicken skin), sample A (PS at MR of 33–36 °C), sample B (PS at MR of 38–42 °C), sample C (PS at MR of 44–46 °C), sample D (PS at MR of 45–49 °C), and sample E (PS at MR of 55–60 °C). There were no significant differences in cooking loss, pH, and water-holding capacity between the meat emulsions, with sample E providing a more stable emulsion with the lowest fat content and highest moisture content. The colour profiles and protein thermal stabilities of the fat-replaced meat emulsions were not significantly different from the control. The hardness, shear force, storage, and loss moduli increased when palm shortenings with higher melting range were used, with sample E having the highest values. Sample E also exhibited a smaller pore size and more compact structure, and thus was well-emulsified compared to the other samples. Overall, palm shortenings—particularly those with a melting range of 55–60 °C—have the potential to replace chicken skin in meat emulsions.