



THE EFFECT OF SUBSTITUTING COCOA AND CONVENTIONAL SUGAR WITH CAROB POWDER AND HONEY RESPECTIVELY ON THE PHYSICO-CHEMICAL, RHEOLOGICAL AND SENSORY PROPERTIES OF DARK CHOCOLATE

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ABSTRACT

The effect of replacing cocoa and conventional sugar with carob powder and honey respectively on the physico-chemical, rheological, and sensory properties of dark chocolate was evaluated. The ash content and crude fiber content of the dark chocolate increased significantly ($p \leq 0.05$) whereas, total sugar content decreased with the increasing carob but decreasing honey concentration in the formulation. The total phenolic content (TPC) increased nearly four-fold and caffeine content reduced to trace amount (0.03 mg /g) with 100% replacement of cocoa with carob. Chocolate melt exhibited a non-Newtonian flow behavior with Casson viscosity ranging from 1.61 to 7.51 Pa.s. The increase in carob content enhanced the storage modulus (G') and loss (G'') modulus with a dominance of elastic nature. Dark chocolate with good acceptable sensory scores, good dark color appearance and with trace amounts of caffeine and high fiber content can be prepared using carob powder and honey as substituent ingredients. The carob, which is relatively underutilized for food applications, although in recent past its application profile in food applications has increased, can be better exploited by the food industry for the development of novel food products like chocolate. The high nutrient profile of carob and its better antioxidant potential in comparison to cocoa can make it a better healthy food ingredient in various types of processed food products.
