

The effects of gamma-aminobutyric acid (gaba) enrichment On nutritional, physical, shelf-life, and sensorial properties of Dark chocolate

ABSTRACT

Hypertension is the leading cause of cardiovascular disease and premature death worldwide. Gamma-aminobutyric acid (GABA) has potential in regulating hypertension. Cocoa beans are rich in GABA, but GABA is being destroyed during roasting of cocoa beans and chocolate production. This study aimed to develop GABA-enriched dark chocolate by partially replacing sugar syrup with pure GABA powder at concentrations of 0.05 (F1), 0.10 (F2), and 0.15% (F3). The chocolate samples were incorporated with GABA after the heating and melting process of cocoa butter to maintain the viability and functionality of the GABA in the final product. The effects of GABA enrichment on the quality of chocolate in terms of nutritional, physical, shelf-life, and sensorial properties were studied. The inclusion of 0.15% GABA significantly increased the GABA content and angiotensin-converting-enzyme (ACE) inhibitory effect of chocolate. The nutritional compositions of the control and GABA-enriched chocolates were almost similar. The addition of GABA significantly increased the hardness but did not affect the apparent viscosity and melting properties of chocolate. Accelerated shelf-life test results showed that all the chocolates stored at 20 and 30 °C were microbiologically safe for consumption for at least 21 days. Among the GABA-enriched chocolates, panellists preferred F2 the most followed by F3 and F1, owing to the glossiness and sweetness of F2. F3 with the highest GABA content (21.09 mg/100 g) and ACE inhibitory effect (79.54%) was identified as the best GABA-enriched dark chocolate.