

Composition, color and antioxidant properties of cocoa shell at different roasting temperatures

ABSTRACT

Cocoa shell is underexploited and is considered as waste. However, roasting cocoa is a fundamental step in producing cocoa products. Composition of the cocoa shell depends on the origin whereas cocoa processing involves fermentation, drying and roasting. However, scarce research has been conducted to analyze the composition of Malaysian cocoa shells at different roasting temperatures. Therefore, this research aims to determine the effect of different roasting temperatures (110, 120, 130, 140 and 150°C) on the proximate composition, colour and antioxidant activity of cocoa shell. Changes in antioxidant activity and polyphenol content were recorded. Fiber and moisture content were significantly ($p < 0.05$) higher in unroasted cocoa shell. However, the protein was found to decrease significantly ($p < 0.05$) after roasting at 150°C (10.93%). Fat content was found higher in roasted cocoa shell at 150°C (6.82%) compared to the unroasted cocoa shell (6.09%). The colour (L value) recorded significantly ($p < 0.05$). the highest for unroasted cocoa shell (51.28) and the lowest at 150°C (47.93), DPPH radical scavenging activity of ethanolic extract of cocoa shell was significantly ($p < 0.05$) higher in 0% ethanol concentration compared to other ethanol concentrations (20, 50, 80 and 100%). The roasted cocoa shell may be considered as a source of natural antioxidants for functional food development and intermediate food ingredient.

Keyword: Cocoa shell; Roasting; Ethanolic extract; Antioxidant