Composition of unfermented, unroasted, roasted cocoa beans and cocoa shells from Peninsular Malaysia

ABSTRACT

Composition of cocoa beans depends on origin and cocoa processing such as fermentation, drying and roasting. However, less research has been conducted to analyse the composition of Peninsular Malaysia cocoa bean at different processing stages. Thus, the purpose of this study was to determine the proximate, phytosterol level, antioxidant content and activity of Peninsular Malaysia unfermented, unroasted, roasted cocoa beans and cocoa shells. Analysis involved was proximate analysis, total phenolic compound (Folinï Ciocalteu reagent assay), antioxidant activity (2,2-diphenyl-1-picrylhydrazyl scavenging assay) and phytosterol composition. Results show that the crude fiber of unroasted cocoa beans and cocoa shells increased from 17.19 to 28.45% and 13.86 to 16.06% respectively after roasting process. The roasting process is suspected to increase the dietary fiber content of cocoa products due to the interaction between polysaccharides, protein, polyphenolic and Maillard products at high temperature. The total phenolic content in cocoa bean and cocoa shells ranged from 2.42 to 10.82 µg GAE/ml. The unfermented cocoa beans contain significantly ($p < 0.05$) higher antioxidant activity (92.3%) compared to other samples. This study shows that cholesterol, stigmasterol and ß-sitosterol were present in roasted cocoa beans and cocoa shells. Hence, the information on the composition of Malaysia unfermented, unroasted, roasted cocoa beans and cocoa shells are needed to enrich the databases composition as a reference for the cocoa industry.

Keyword: Composition cocoa beans; Cocoa shells; Phytosterol; Total phenolic compounds; Antioxidant activity