PROXIMATE COMPOSITION AND FATTY ACID ANALYSIS OF COCOA BEANS (*Theobroma cacao* L.) FROM LOCALLY SELECTED ACCESSIONS OF SRI LANKA

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Abstract

Cocoa (*Theobroma cacao* L.) beans serve as a fundamental ingredient in chocolate manufacture. To meet the growing demand for cocoa, new accessions namely, WK2, W5/5, W6/449 and EARS 306 have been introduced in Sri Lanka. Nonetheless, detailed investigations on nutritional composition of these newly introduced accessions remain limited. Hence, in this study, the proximate composition and fatty acid (FA) profile of these accessions were evaluated. Matured-cocoa beans collected from Matale district of Sri Lanka were naturally fermented for 6 days. After cleaning with running water, the beans were dried at 50 ^{o}C in a forced-draft oven. Dried cocoa beans were manually de-shelled and ground into powder form. Proximate composition was determined using standard AOAC methods on a wet-weight basis, while FA composition was analyzed by gas chromatography with flame ionization detection. The proximate analysis indicated significant (p<0.05) variations among the cocoa accessions; fat (~28–48%) was identified as the predominant component in all cocoa accessions except W5/5 (28.16%), followed by carbohydrate (~22–35%) and protein (~14–17%). The highest fat content was shown by W6/449 (48%), which was significantly (p<0.05) higher than all other accessions. Saturated fatty acids (~63–64%) were predominantly found in all accessions, with stearic acid (~34–37%) being the most abundant FA followed by palmitic (~26–28%) acid. Oleic acid (~32–34%) was the major unsaturated fatty acid in all accessions. Overall, the study highlighted the substantial nutritional quality and inter-varietal differences of locally selected cocoa accessions, with W6/449 being the highest fat containing accession, indicating its potential uses in the confectionery industry.

Keywords: Cocoa, cocoa butter, fatty acid profile, nutritional composition