

COMPARISON RESEARCH OF THE ANTIOXIDANT ACTIVITY OF RAW COCOA BEANS AND PROCESSED COCOA POWDER FROM DIFFERENT MANUFACTURING COMPANIES IN GHANA

Danyo E.K.^{1,2}, Selezneva I.S.¹

¹) Ural Federal University, Russia

²) University of Health and Allied Sciences, Ghana

E-mail: e.kdanyo@gmail.com

The total content of polyphenols in cocoa powder was determined in the equivalent of tannic acid per gram of dry weight of the cocoa powder sample. The ABTS and DPPH free radical scavenging activity of cocoa powder extracts were evaluated in comparison with vitamin C.

Cocoa is known globally because of the products that are derived from it, especially chocolates. Raw cocoa bean has been recognized globally as one of the most nutritious foods, which protects the body against free radicals, heart diseases, and many types of cancer [1]. Cocoa powder contains good quantities of caffeine, theobromine, and methylxanthine peptides [2]. The aim of this study was to evaluate and compare polyphenolic content and the antioxidant activity of raw cocoa beans and processed cocoa powder obtained from different food companies in Ghana. To identify whether technological processes involved in cocoa powder production can affect the levels of polyphenols in the product compared with raw cocoa powder.

The result of our study showed the total polyphenolic content in the cocoa powder ranged from 1.0–1.8 mg tannic acid equivalent per gram dry weight of the cocoa powder sample (mg TAE/g). The raw cocoa powder and the processed cocoa powder samples contained good amount of polyphenols. Therefore, the cocoa samples should have antioxidant activity. We established that the technological processes involved in cocoa powder production have not changed the total amount of polyphenols in the cocoa powder samples. The antioxidant activity of the cocoa powder samples did not change too. The cocoa powder extracts demonstrated good free radical scavenging activity. The ABTS (2,2'-azino-bis(3-ethylbenzothiazoline-6-sulfonic acid)) and DPPH (2,2-diphenyl-1-picrylhydrazyl) radical scavenging activities of the extracts ranged from 64–80 and 39–62 % inhibitions, respectively. The extracts' ferric-reducing antioxidant potential (FRAP) values ranged from 0.5 to 0.83. The raw cocoa powder sample demonstrated higher ABTS and ferric reducing antioxidant scavenging activity compared to the processed samples. However, the processed cocoa powder samples have higher DPPH scavenging activity compared to the raw cocoa powder samples. The antioxidant activity all samples were lower than vitamin C as control.

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