

PHYSICO-CHEMICAL ASSESSMENT OF NATURAL SWEETENERS STEVIOSIDES PRODUCED FROM STEVIA *Rebudiana bertonii* PLANT

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ABSTRACT

Stevia plants are a good source of carbohydrates (61.93 % d.w.), protein (11.41 % d.w.), crude fiber (15.52 % d.w.), minerals (K, 21.15; Ca, 17.7; Na, 14.93 & Mg, 3.26 mg/100g d.w. and Cu, 0.73; Mn, 2.89; Fe, 5.89 & Zn, 1.26 mg/100g d.w.) also essential amino acids were found in amounts higher than those recommended by FAO and WHO for adults as well as non- essential amino acids. Stevioside was extracted and purified from the dried Stevia leaves by three methods. The first one, extraction by hot water (65 °C) at different ratios of leaves to water (1:15 to 1:75). The optimum ratio was 1:35 in which the maximum stevioside content was obtained (7.53 %), recovery of stevioside was 80.21 % and purity related to depigmentation was 97.56 %. The second method, extraction by methanol at ratio 4:1 methanol/leaves and purification, recovery of stevioside was 94.90 % and purity was 81.53 %. The third method, extraction by mixture of methanol/water (4:1) and purification, recovery of stevioside and purity were 92.34 and 79.81 %, respectively. Physical and chemical characteristics of the extracted stevioside were studied. Stevioside extractions were analyzed by HPLC in which the highest amount of stevioside (23.20 %) was obtained in methanol extract. Physical, chemical and organolyptic characteristics of extractions indicate that this sweetener has been applied as substitutes for sucrose in different drinks and baking products.

Keywords: Stevia, stevioside, physico-chemical properties, extraction, natural sweeteners.

INTRODUCTION

The plant *Stevia rebaudiana Bertoni* (compositae) has been widely cultivated in the world for the sweet diterpene glycosides that are mainly contained in its leaves. In Egypt, the gap between sugar production (1.757 million tons) and consumption (2.6 million tons) represents a serious problem, since it was estimated to be 0.843 million tons (Alaam, 2007). Nowadays, attention is concentrated upon using Stevia in food industries, in order to close the gap between the production and consumption.

The Stevia plant was recently introduced to Egyptian agriculture in order to produce a natural sweetener than can cover some of the lack of sugar production in Egypt (Alaam, 2007). Stevia cultivation in different places of the world; it is expected that in the Egyptian agricultural environment; one feddan of Stevia may produce up to 400 Kilograms of Stevia sugar, annually.