

Iron, Zinc and Total Phenolic Content in Cooked Biofortified NUA 45 and Gloria Sugar Beans: The Case of Zimbabwe

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Abstract

Biofortification involves breeding of staple crops that are micronutrient-dense and high yielding for example iron-biofortified beans. The biofortification of crops has been found to be cost effective and feasible to fight micronutrient deficiencies. The aim of the study was to determine the iron, zinc and total phenolic composition for the biofortified NUA 45 and Gloria sugar beans in raw as well as cooked samples with and without previous soaking. Determination of iron and zinc content in the raw, cooked bean grain samples with and without soaking was carried out by Inductively Coupled Plasma (ICP) Optical Emission Spectrometry whereas the determination of Total Phenolic Content was done using the Folin-Ciocalteu colorimetric method. The highest zinc concentration (0.295ppm) was found in raw Gloria sugar beans whilst the raw NUA 45 sugar beans had the highest iron content (0.755ppm) and total phenolic composition (352.8mg/100g). For the cooked bean samples Gloria sugar beans had the highest zinc concentration (0.247ppm) cooked after soaking. NUA 45 sugar beans had no significant difference on the zinc content after being cooked with and without soaking. Amongst the cooked samples the biofortified NUA 45 sugar beans cooked after soaking had the highest iron content (0.373ppm) as well as the highest total phenolic content in the beans cooked without soaking (200.5mg/100g). Biofortified NUA 45 and Gloria sugar beans proved to be good sources of iron, zinc and phenolic compounds. However, cooking with and without soaking diminished the iron, zinc and the total phenolic composition of the cooked NUA 45 and Gloria sugar beans.

Keywords: Biofortification, NUA 45 Sugar Beans, Gloria Sugar Beans, Cooking