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Farmers' and academia's views"

Micronutrient profiles of pigeon peas and dark green leafy vegetables from Lindi region, Tanzania

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Abstract

Pigeon peas (*Cajanus cajan* L.) are legumes with a high nutritional value acting as major source of protein of many tropical and subtropical regions of the world. Dark green leafy vegetables (DGLV) on the other hand are important sources of micronutrients and other phytochemicals. This study under the Vegi-Leg project evaluated amino acids (AAs) in pigeon peas (PPs) and minerals, carotenoids and phytates in PPs and DGLVs. PPs and various DGLVs were analysed for AA, minerals, carotenoids and phytate content using an amino acid analyser and ICP-OES and HPLC techniques.

The analyses of 'undehulled' local and improved genotypes of PPs revealed an excellent AA profile with 18 AAs and a (median) total of 19 gram/100 grams. Glutamatic acid and phenylalanine showed concentrations 2 gram /100 gram, and improved PPs showed higher lysine concentrations compared to local genotypes. The mineral analysis revealed high median concentrations of iron (2.4 mg/100g), zinc (2.1 mg/100g), calcium (80 mg/100g) and magnesium (123 mg/100g), but also a very high total phytate (IP5 plus IP6) concentration of 701 mg/100g.

DGLV such as Amaranth spp but also 'leaves' from conventional agriculture such as cassava and sweet potato represented very good sources of provitamin A (> 4 mg beta-carotene/100 g fresh weight (FW), other carotenoids (lutein), iron (3.8 mg/100g FW), calcium (236 mg/100g FW) and magnesium (94 mg/100g FW). In general, the median phytate content of the leafy vegetables was very low (6.3 mg/100g FW), contrary to expectations and regarding previous publications. This study shows that PPs and DGLVs have the potential to improve dietary intake of specific macro and micronutrients and therefore promoting these foods can have a positive impact on food and nutrition security.

Keywords: Amino acids, carotenoids, dark green leafy vegetables, minerals, phytates, pigeon peas, Tanzania

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