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Nutritional Evaluation of *Momordica balsamina* Leaf Powder Harvested at Different Growth Stages

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Abstract

In most African indigenous leafy vegetables (AILVs), their nutritive concentrations are influenced by the plant's growth stages. *Momordica balsamina* is an AILV in the Cucurbitaceae Family, rich with nutraceutical and pharmaceutical properties, which occurs in the plant at different growth stages. A greenhouse study was conducted to determine the nutritional value of M. balsamina harvested at different growth stages. Seedlings of M. balsamina were raised in plastic bags, containing a mixture of loam soil and Hygromix (3:1 v/v). Six harvesting stages, namely, vegetative (reference), bud development, flower initiation, fruit set, fruit ripening and physiological maturity, served treatments, with 10 replicates. The experimental design was RCBD. From sixty-four days after initiating the experiment, harvested leaves were freeze-dried and then ground to fine powder for nutritional analysis. Treatments had highly significant ($P \leq 0.01$) effect on the nutritional quality, contributing 46, 93, 68, 93, 95, and 96% to TTV in K, Ca, Mg, Zn, Fe and P, respectively. Relative to the reference, Ca and Mg increased at all growing stages and the highest (12033 and 2129%) was recorded at fruit development and physiological maturity stages, respectively. Phosphorus and Zn were the highest (5 and 10%) at flower-bud development stage, whereas K was the highest (95%) at flowering. Incidentally, P, Zn and K decreased from fruit-set until physiological maturity. Iron was the highest (5%) only at flowering and was decreased at all other growth stages. In conclusion, growth stages of M. balsamina had an effect on the accumulation of nutrients when harvested at different growth stages.