

JOINT SYMPOSIUM OF THE 8TH INTERNATIONAL AGRICULTURE CONGRESS 2018 AND 6TH INTERNATIONAL SYMPOSIUM FOR FOOD & AGRICULTURE 2018 (8TH IAC – 6TH ISFA 2018)

ORAL

ADVANCEMENT OF IMPOVERISHED POPULATIONS THROUGH APPROPRIATE NUTRIENT SUPPLEMENTATION OF Moringa oleifera L

Rufa'i Shamsuddeen¹, Mohamed Musa Hanafi², Sulaiman Sani Kankara³, Hasmah Mohidin⁴, Lado AbdurRahman¹ and Syed Rastan Syed Omar⁵

¹ Department of Agronomy, Faculty of Agriculture, Bayero University Kano,

700241, Kano, Nigeria ² Laboratory of Plantation Crops, Institute of Tropical Agriculture, Universiti Putra Malaysia, 43400 Serdang, Selangor, Malaysia Email: mmhanafi@agri.upm.edu.my

Moringa plant parts could be exploited to make the greatest nutraceuticals contribution amongst impoverished communities globally. Considering the many cases of malnutrition related deaths in especially many regions of Africa, the current research effort was conceived with the objective of appraising the nutritive potential of Moringa oleifera L. plant through the evaluation of proper agronomic practice that will enhance its nutritive potential. Measured quantity of dried roots, stem, and leaves portions of 5 months old Moringa oleifera L. seedlings, grown under various applied phosphorus (P) and potassium (K) rates were analysed for essential and nonessential amino acids content, secondary metabolites (phenolics and flavonoids), total antioxidants, and mineral nutrient elements. The high-performance liquid chromatography (HPLC) analysis revealed the presence of 9 essential and 7 nonessential amino acids, with a range of 4.24 to 10.04 gkg⁻¹ recorded for leucine, threonine, histidine, glutamic acid, aspartic acid, and glycine. The 2,2'- diphenyl-1picrylhydrazyl (DPPH) and the ferric reducing antioxidant power (FRAP) assay revealed strong antioxidants presence (up to 68% DPPH scavenging activity and a high level FRAP potential of 2500 mg ascorbic acid equivalent (AAE) / 100g dry weight (DW). Folin-Ciocalteu's and aluminium chloride calorimetric assay revealed high levels of secondary metabolites (ranging from 1000 – 1350 mg gallic acid equivalent (GAE)/100g DW total phenolics and up to 2400 mg quercetin equivalent (QE)/1mg DW total flavonoids), and the nitric acid wet digestion procedure revealed a lot of mineral nutrient elements (with significant values of up to 19.13 g kg⁻¹ maximum content acquired from calcium (Ca) and up to 9.90 g kg⁻¹ recorded for iron (Fe). The trial establishes the antioxidants presence in various plant parts (roots, stem, and leaves), as well as demonstrate the existence of substantial level of amino acids plus mineral nutrients (especially Fe and Ca) within the Moringa oleifera L. species.