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## US-Africa Collaboration in a Chemical Education Project Involving Analysis of Amaranthus Grain Oil from Selected Agro-Ecological Zones in Kenya

Joseph K. Rugutt<sup>\*†</sup>, Kevin Otieno Okoth<sup>‡</sup>, Ruth N. Wanjau<sup>‡</sup>, Nicholas K. Gikonyo<sup>‡</sup>, Alex Machocho<sup>‡</sup>, Kipgeno J. Rugutt<sup>§</sup>, Kristina Y. Rykhlya<sup>†</sup>, Keil B. Harris<sup>†</sup>, Katie R. Wilson<sup>†</sup>, and Joel Koeh<sup>\*\*</sup>

<sup>†</sup>Missouri State University-West Plains, Department of Chemistry, 128 Garfield, West Plains, MO 65775; <sup>‡</sup>Department of Chemistry, Kenyatta University, School of Pure & Applied Sciences, P. O. Box 43844-00100, Nairobi City, Kenya; <sup>§</sup>Illinois State University, Department of Educational Administration and Foundations, College of Education, DeGarmo 331, Campus Box 5900, Normal, IL 61790-5903; <sup>\*\*</sup>School of Science & Technology, Department of Biological Sciences, University of Kabianga, Main Campus, P.O. Box 2030, 20200, Kericho City, Kenya, JRugutt@MissouriState.edu

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**Abstract.** Amaranthus is a cosmopolitan genus of annual and perennial plants. Worldwide, amaranths are cereals, leaf vegetables, or ornamental plants. Two African species of amaranthus grain; *Amaranthus cruentus* and *Amaranthus hypochondriacus* from selected regions in Kenya (Bondo, Bureti, Embu, Kenyatta University (KU), Kisumu, Kitale, Meru and Nyeri) were tested for oil content and fatty acid profiles. The oils from the grains were extracted using Soxhlet method for the total lipid content and Dyer and Bligh method for the fatty acid profile and oil oxidative stability. The fatty acid composition was determined using gas chromatography. The study showed that statistically there was no difference in the composition of oil among the various regions. The fatty acid profile for *Amaranthus cruentus* included: linoleic acid (35–38%), oleic acid (32–36%), palmitic acid (22–24%), stearic acid (2–4%), and linolenic acid (1–2%). There was no significant difference in the composition of fatty acids in the two species of amaranth studied except oleic and linoleic acids. The fatty acid profile for *Amaranthus hypochondriacus* was: linoleic (41–44%), oleic (26–34%), palmitic (19–24%), stearic (2–3%), and linolenic acid (1–3%) with no significant differences in the selected regions. The present study reported capric, lauric, myristic, pentadecanoic, palmitoleic and heptadecanoic acids for the first time though in small amounts. The total lipid component ranged from 7 to 10% for

*Amaranthus hypochondriacus* and 7 to 9% for *Amaranthus cruentus*. The results of the study compared well with those done earlier in other countries.

*Key Words:* In the Classroom; analytical chemistry; biochemistry; *Amaranthus*; fatty acid