

## Characterization of Kenyan Honeys Based on Their Physicochemical Properties, Botanical and Geographical Origin

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Received 24 August 2018; Revised 29 November 2018; Accepted 16 December 2018;  
Published 10 January 2019

Academic Editor: Salam A. Ibrahim

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### Abstract

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Properties and composition of honey are essential in providing information regarding their quality as well as in their differentiation based on production region characteristics, e.g., floral sources. This paper presents physicochemical properties and floral sources (botanical origin) of 21 honey samples obtained from arid and semiarid areas of Kenya, specifically, West Pokot, Baringo, and Kitui Counties. Physicochemical parameters which were analyzed to determine honey quality included moisture content, hydroxymethylfurfural (HMF), diastase activity, free acidity, and electrical conductivity. Values of these parameters were compared with those of the existing local, regional, and international standards for honey. Melissopalynological analysis (pollen analysis) was also carried out to provide information on botanical origin of the honeys. Results showed mean parameter values of moisture, 16.34%; HMF, 23.28 mg/kg; diastase activity, 10.67 Schade units; free acidity, 22.95 meq/kg; and electrical conductivity, 0.40 mS/cm. Free

acidity and electrical conductivity values of honey samples obtained from West Pokot were significantly lower than the values of honeys from Baringo and Kitui. Eighteen (18) honey samples had all parameter values within the limits set in the East African, Codex Alimentarius, and the European Union directive standards for honey. Results also showed a total of 29 pollen types in the honey samples analyzed, and Acacia spp. was the predominant pollen type in 4 of the 21 honey samples. Findings of this study showed that Kenyan origin honeys can tap into the existing regional and international markets based on their quality which can be attributed to their botanical origin. Results of this study also suggested that honey producers have undertaken appropriate measures in honey harvesting, processing, handling, and storage. However, there is a need to build capacity of producers whose honey were of unacceptable quality. This would involve training on proper honey production, processing, and handling practices as well establishment of honey collection and processing centres at the local level in order to improve honey quality. This will enhance access to existing honey markets. Conservation of bee floral sources would also be needed to maintain honey quality.