

ABSTRACT

The Utilization of Cassava (*Manihot Esculenta*) and Quality Characteristics of Improved Varieties. A Case of Marigat, Baringo County.

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Cassava provides vital nutrients to its consumers and is considered a food security crop for poor rural communities, particularly in arid and semi-arid regions of developing countries. The nutritional value of this crop is normally affected by many factors. In the central Rift Valley of Kenya, scientists have introduced new varieties. However, little is known about utilization and quality characteristics of new varieties, thus the need for this study. The objective of this study was to evaluate the utilization of cassava roots among the study group and to study culinary characteristics and nutritional values of the newly introduced cassava root variety. A total of 51 introduced cassava varieties were grown and all harvested at 16 months of age by Kenya Agricultural Research Institute (KARI)-Marigat. External preference mapping resulted in sensory panelists rejecting some of the cassava roots ($n = 26$) from further processing owing to the fact that they were woody, rotten, dark colored and fibrous. The remaining samples ($n = 25$), plus one sample ($n = 1$) picked from the local market were prepared and evaluated to determine ease of cooking. The panelists evaluated each sample and recorded their opinion in terms of surface appearance, taste, texture and overall acceptability. The attributes were scored using a hedonic scale ranging from 1-5 (where 1 = worst and 5 = very good). The varieties with a mean score of three ($m = 3.0$) and above in the given attribute(s) were considered acceptable. The surface appearance scored the highest means (3.80 ± 0.63) and least mean score was texture (3.20 ± 0.42). ANOVA results showed a significant mean difference in their sensory characteristics. The final test eliminated some of the cassava samples ($n = 16$). The remaining accepted cassava samples ($n = 10$) were further processed for nutritional quality determination. Proximate composition and mineral elements were measured using AOAC and HPLC. The results obtained were compared with U.S.D.A-21 reference standards. Protein levels of cassava variety R252m recorded the highest with 2.05% per 100g lower than the 3% USDA-21 reference standards. Fats ranged from 0.17% to 1.24% with only P12m cassava sample having value above the reference standards (1%). Carbohydrate (CHO) values were high in POROs with the value of 93.51% per 100gm, higher than the recommended U.S.D.A 21 standards (78%). Calcium (Ca) recorded highest in the variety P15 at 6.92% per 100g while P117o had the highest Fe content with 1.56 % per 100g. Phosphorus (P) was found in large amounts with P15m leading with 96% per 100gm. Iron (Fe), Fat, Potassium (K), and Protein had significant positive correlation with sensory qualities.

Keywords: Cassava utilization, quality characteristics, improved varieties, Baringo county.

