ABSTRACT

Protein sources in the diet of people living in semi-arid land of Kenya are lacking and if available it is costly to them. In terms of safe food and a healthy food supply, cowpeas (Vigna unguiculata.) are a significant source of protein, carbohydrates, and minerals especially for poor populations in the Kenya, it is said to be poor man's meat. The aim of this study was to determine nutritional composition of newly bred ten cowpea lines and five varieties commonly grown in Eastern Kenya of Kitui, Machakos and Makueni counties to understand their potential utilization in curbing rising food and nutrition insecurity in arid and semi-arid lands ASALs and in any other food applications in Kenya. The experiment was arranged in Completely Randomized Design (CRD) whereby proximate composition and minerals were determined using standard AOAC and AACC methods and technological characteristics checked using modified methods used by other researchers. Collected data were subjected to Analysis of Variance (ANOVA) using SAS (2006) version 9.1, mean separation was done using Tukey's Honestly Significant Difference (HSD) method at 5% level of significance. Cowpeas composition ranged from 12.28% - 13.35% for moisture content, 49.37% - 55.74% for total carbohydrates, 2.99% - 3.34% for crude ash, 0.13% - 0.81% for crude lipids, 23.37% - 29.70% for crude protein and 1.40% - 4.34% for crude fibers. Cowpea samples recorded highest percentage of essential amino acids (60.71%) and non-essential amino acids (39.29%). Minerals ranged from 1.97 - 2.69 mg/100g for calcium, 3.23 - 3.90 mg/100g for magnesium, 205.53 - 223.30 mg/100g for sodium, 0.80 - 1.23 mg/100g for zinc, 1071.15 - 1152.62 mg/100g for potassium and 0.62 - 1.06 mg/100g for phosphorus. For technological properties, lines absorbed water equivalent to their weights and they were comparable to varieties grown in the region. From the results it showed that cowpea line IT97K-1042-3, TEXAN PINKIYE, TX123, IT85F-867-5, IT82D-889-1 and IT82D-889 have desirable attributes such as high crude protein contents, good water absorption capacities and volumetric expansion. They compared well with existing K80 variety. These cowpea lines could possibly be bred and combined into a single cowpea line and further improved by breeders to have other good properties such as higher levels of water absorption during soaking hence reduced cooking times. Therefore, this work has shown that cowpea lines developed can be used as food security crop, industrial food applications and enriching foods of low protein like in complementary foods for healthy food supply in Eastern Kenya.