Abstract

Consumption and demand for potato crisps as snack in Kenya has been tremendously increasing in the past decade. Deep-oil-fried foods such as potato crisps absorbed high level of oil that are not only important nutritionally but also has a marked bearing on the flavour and calories supplied. It is, however, important to note that oils used to process foods such as crisps undergo reactions including thermo-oxidative and hydrolytic alterations which may have profound negative effects to consumers, especially when crisps are taken after long storage duration. This study was designed to determine levels of peroxides and free fatty acids as influenced by cultivar, frying temperatures and storage period in crisps processed from four Kenyan potato cultivars. Potato tubers were processed into crisps of 1.5 mm thick at frying temperatures of 160, 170 and 180 °C. The crisps were packaged into polythene bags commonly used by Kenyan industries (150 gauges) and stored on the laboratory shelf for a period of 4 months. The results indicated that frying crisps at elevated temperatures significantly (P ≤ 0.05) increased the levels of peroxides and acid values in fresh oil from 1.93 to 2.22 meq of oxygen/kg and 0.01 to 0.1 mg KOH/g, respectively. Peroxide values and acid values significantly (P ≤ 0.05) differed among the cultivars with clone 391691.96 having lower levels of peroxides compared to the rest. There were significant (P ≤ 0.05) increases in peroxide value and acid value with time of storage in all the cultivars with the exception of clone 391691.96. The potato cultivar, frying temperature and storage duration are very important determinants on how safe a potato crisp picked from the shelves of market outlets should be. It is therefore, important for all the manufacturers to declare on the labels the frying and required storage conditions including dates of expiry.