

# Effect of Packaging and Storage Temperature on the Shelf life of Crisps from four Kenyan

## Potato Cultivars

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### ABSTRACT

Deep-oil fried foods such as potato crisps absorb high levels of oil that is not only important nutritionally but also has a marked bearing on the flavor and calories supplied. It is, however, important to note that oils used to process snack foods such as crisps undergo reactions including thermo-oxidative and hydrolytic alterations which may have profound negative effects on consumers, especially when crisps are consumed after prolonged storage. This study was designed to determine changes in the levels of peroxides, free fatty acids and moisture as influenced by packaging and temperature during storage of crisps processed from four Kenyan potato cultivars. Potato tubers were processed into crisps of 1.5 mm thickness at a frying temperature of 170 °C for 3.5 min. The crisps were packaged into aluminium foil pack and polyethylene bags commonly used by Kenyan industries and stored at 25 °C, 30 °C and 35 °C for a period of 24 weeks. The results showed that aluminium foil pack was the most effective in controlling increase in moisture content, peroxide values and free fatty acid levels. Potato cultivar significantly ( $P \leq 0.05$ ) influenced the formation of peroxides. Crisps stored at 35 °C had significantly ( $P \leq 0.05$ ) shorter shelf life compared to those stored at 25 and 30 °C. The flavor, aroma and acceptability scores of the crisps significantly ( $P \leq 0.05$ ) decreased and varied with cultivar and storage temperature. Cultivar, packaging and storage temperature are important determinants of crisps shelf life and safety.

**Key words:** fat oxidation, hydrolytic alterations, peroxides, moisture buildup, potato crisps