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Felix Akharume, Kaushlendra Singh, Jacek Jaczynski, Litha Sivanandan

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Microbial Shelf Stability Assessment of Osmotically Dehydrated Smoky Apples

Felix Akharume[1], Kaushlendra Singh[1], Jacek Jaczynski[2] and, Litha Sivanandan[3]

[1]School of Natural Resources

[2]School of Agriculture and Food

[3] Extension Service (Families and Health Programs)

West Virginia University, Morgantown, USA.

Abstract

The infusion of Refined Liquid Smoke (RLS) during osmotic dehydration in apples slices was performed and its effect on some selected quality attributes (color, texture, and microbial load) of resulting apples was evaluated over a storage period under vacuum and non-vacuum packaging. Prior to hot air drying at 74 □, fresh apple slices were pretreated via osmotic dehydration using either 42% w/w sugar solution or 42% w/w sugar solution with 1% food grade refined liquid smoke (RLS). The quality attributes were measured at room temperature during a storage period of five months. For control, quality attributes of convectively dried apples with no osmotic dehydration pretreatment were used. The result showed that dried apple slices pretreated in pure sugar solution retain the color of fruit better than untreated dried samples, while samples infused with RLS showed a characteristic brown coloration. Additionally, RLS infused dried apples showed better textural properties when compared with the control. In all samples, significant microbial reduction (below 5 log CFU/g) was recorded throughout the storage period. However, RLS infused dried apples showed the highest microbial growth reduction and the control showed the worst microbial growth reduction in a non-vacuum package.

Key words; osmo-convective dehydration, smoky apples, liquid smoke, quality, and microbial growth.

1.0 Introduction

Fruit preservation is key to minimizing fruit deterioration, eradicating waste, loss of farm revenue, ensuring availability all year around, and providing safe, nutritive, and qualitative fruits to the consumers.

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