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Postharvest tropical fruit preservation for use as natural yogurt flavouring

Master Thesis at the Department of Agricultural Engineering and Department of Nutritional, Food and Consumer Studies

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Abstract

Abstract Yogurt manufacturing is a common method for preserving and extending the shelf life of fresh milk worldwide. In many countries, yogurt is often flavoured with fruit preparations or fruit flavourings that are not products of the local economy or rely on costly imported inputs. Kenya represents an economy in which yogurt manufacture as a method of milk preservation plays a large and important economic role. It is also a country that has a growing agricultural sector and abundant tropical fruit production. Small-scale manufacturing of fruit preparations from local harvest for use in fruit on the bottom yogurt offers the opportunity for producers to not only extend the usability of regionally available produce past the limited harvest season, but also to support local farmers and economies, and add value to their products. The nutritional and sensory characteristics of locally sourced fruit can be preserved well past the annual or biannual window of ripeness, using as few inputs as possible, in some cases just fruit pulp and sugar, which makes the product less costly to produce and more attractive to the consumer. Thermal processing and conscientiously applied hurdle technology allow fruit preparation production to occur during the few weeks or months of harvest, and subsequently supply suitable fruit on the bottom yogurt manufacturing materials throughout the following year. The hurdles applied include heat treatment, lowering of pH, water activity reduction, and aseptic packaging. To test this premise, varieties of mangos and passion fruit typically grown in Kenya were used to produce four different fruit preparations for the purpose of shelf stability testing. A mango syrup, a mango jam, a passion fruit syrup and a passion fruit jam were produced, packaged and stored with freshly fermented yogurt under refrigerated, ambient, and accelerated conditions in order to determine acceptability, stability, and scope of deterioration. Weekly sensory, analytical and microbial testing over the course of 21 days contributed to the conclusion that passion fruit syrup provided a pleasing, stable, and identifiable passion fruit flavour throughout the storage period but also resulted in a thinner consistency. Mango jam flavoured the yogurt with characteristic mango flavour and with the added benefit of whole mango pieces contributing texture, while mango syrup contributed similar flavour and aroma character, but without textural inclusions. Passion fruit jam produced using the passion fruit shells as a pectin source proved to be below the threshold of acceptability as a fruit on the bottom yogurt preparation due to colour migration and homogeneity issues. Further development could be explored to address these sensory issues.