DETERMINATION OF MICROBIAL QUALITY AND QUANTITY OF STORED CINNAMON QUILLS AT DIFFERENT MOISTURE LEVELS

A dissertation submitted to the
Faculty of Animal Science and Export Agriculture
Uva Wellassa University
In partial fulfillment of the requirements for the award of
Bachelor of Science in Export Agriculture

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2014

ABSTRACT

Since cinnamon is one of the major spice crops in Sri Lanka, maintenance of the quality of the processed cinnamon is very important. Microbial infection of processed cinnamon quills makes the final product less demanded with high post-harvest losses. Experiments were conducted to identify particular types of fungi that thrive on cinnamon quills and to determine the effect of moisture content, Relative Humidity, temperature and the storage period on the microbial quality and quantity. Cinnamon quills collected from three different places were subjected to analysis for quantification and identification of different types of microbes under the variations of temperature and relative humidity during storage period and subsequent culturing was done. According to obtained colony and microscopic characteristics, *Rhizopus sp., Penicillium sp., Aspergillus niger and Aspergillus flavus* were the most common types of fungi encountered on cinnamon quills. But the emergence and the quantity of fungal colony forming units were varied with the moisture level, Relative Humidity, location and the availability of initial inoculum. There was a strong significant symbiotic relationship between number of colony forming units of fungi and bacteria which was increased with the increment of Relative Humidity, decrement of temperature and available moisture content. The maximum number of fungal and bacterial colonies was observed with 80 – 90 % of relative humidity, 10-20 % of moisture, 28-31 $^{\circ}$C of temperature and 15- 35 days of storage period. The cinnamon samples taken from the processing center has less microbial infestation than the samples taken from the other farmer levels due to proper post-harvest and processing practices.

Key words – Cinnamon quills, fungi, colony forming units, microbial quality