

Effect of Storage Conditions to Minimize Contaminants before Packaging of Ceylon Cinnamon Quills (*Cinnamomum zelanicum* Blume)

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Cinnamon is one of the major spice crops in Sri Lanka. Maintenance of the quality of the processed cinnamon is very important in exportation to get a good market value. Microbial and store pest contaminations of processed cinnamon quills make the final product less demanded with high post-harvest losses. This study was conducted to identify the most suitable storage conditions to maintain the export quality of the cinnamon quills without using synthetic chemicals. Collected cinnamon quill samples from the processing center of National Cinnamon Research and Training institute at Palolpitiya were stored at different time durations (0,3,7,14 days) with different combinations of temperature and relative humidity (RH) levels [(15 °C, 45%), (15 °C, 60%), (30 °C, 30%) and (30 °C, 60%)] in a growth chamber. The experiment was conducted as triplicate using 16 treatments. Moisture content (%), store pests per 100g, fungal and bacterial colony per 100g and color of the cinnamon quill samples were measured before applying the treatments and after 3 days, 7 days and 14 days from the treatment. Results revealed that 9.6% of mean moisture level was gained after 14 days, under 30 °C temperature and 60% RH and it has taken 3 days to decrease moisture level up to 12% under the treatment of (15 °C, 45%), (30 °C, 30%) and (30 °C, 60%) ($P < 0.05$). Under the 30 °C temperature and 30% RH store pests were decreased up to 1 within 3 days while 7 days spent to kill all the store pests. All the store pests were killed after 14 days under the treatment of (30 °C, 30%) (30 °C, 60%) and (15 °C, 60%) ($P < 0.05$). Significantly lower fungal and bacterial colonies were observed after 14 days under 15 °C temperature and 60% RH ($P < 0.05$). Quill samples under the 15 °C temperature and 60% RH showed the best color in colorimeter than the quills of other storage conditions as per the ISO standards. Thus, the expected quality of the cinnamon quills can be gained within 14 days under the 15 °C temperature and 60% RH.

Keywords: Cinnamon quills, Color, Moisture content, Storage conditions, Store pests