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EFFECT OF HYDRO-HEATING TREATMENTS ON LE-CONTE PEAR FRUITS QUALITY AT COLD STORAGE

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ABSTRACT

Mature Le-Conte pear fruits (*Pyrus leconti, Rehd*) were harvested at the third week of August in 2007 & 2008 seasons. Five post harvest treatments were applied on nearly uniform fruits [dipping in, tap water (control), hot water (50 ± 2°C), hot solution (50 ± 2°C) of Ascorbic acid 1 %, hot solution (50 ± 2°C) of sodium benzoate 100 mM and the last treatment fruits were dipped in hot water (50 ± 2°C), dried and coated with black cumin (*Nigella sativa*) oil]. Results in both seasons showed that the hydro-heating treatments and plant oil coating were more effective in maintaining fruit quality, storability and reducing disorders.

Key words: Le-Conte pears; hot water; Ascorbic acid; sodium benzoate; black cumin oil coating; cold storage; fruit quality.

INTRODUCTION

"Le-Conte" (*Pyrus leconti, Rehd*), is the most important pear cultivar in Egypt. It is essential to know that pear fruits when picked at the optimal physiological age with the possible short post harvest handling then kept under the optimal storage conditions to slow biological and physiological changes, will all help in extending the shelf life and marketing time of the fruits.

Economic losses caused by post-harvest diseases are among the most important concerns for growers, post-harvest fruit decay has typically been controlled by application of synthetic fungicides. However, important problems associated with the massive use of these chemicals, such as proliferation at resistant strains of pathogens and concerns about public health and environmental contamination, have increased the need for alternatives (Crisosto 2006). Among these alternative treatments:-

a- Hot water dipping treatments.

Post harvest heat treatments are currently used commercially in several countries, for examples as hot water dips, hot water brushing techniques and hot air treatments. High temperature treatments of fruit are more effective to control fungal pathogens, insects and decay (Covey, 1989; Barkai-Golan and Freguson *et al.*, 2002). Abd El-Wahab (2007) reported that different hot water dips reduced the percentage of decay, weight loss and phenols of Apricot and peach.

b. Sodium benzoate:

This compound leaves low or undetectable residues on the fruit and is approved for many industrial and agricultural applications. And it is registered as generally recognized as Save (GRAS).

The efficiency of the GRAS increases with the increase of solution temperature (up to 55-60 °C) (Crisosto, 2006).

Selected properties of sodium benzoate Environmental Protection Agency code 9103, Formula ($C_7H_5NaO_2$), Mol. wt. (144.11), with primary activity on bacteria and secondary activity on Yeasts, (Hall, 1988).