THE EFFECT OF BLANCHING AND FIRMING AGENT ON THE QUALITY OF BLANCHED SWEET POTATOES

By

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ABSTRACT

THE EFFECT OF BLANCHING AND FIRMING AGENT ON THE QUALITY OF BLANCHED SWEET POTATOES.

Low-temperature–long-time (LTLT) as opposed conventional-high temperature - short -time (HTST) blanching was applied to produced firmer texture of blanched sweet potatoes. This study was carried out to determine the effect of the low temperature blanching and a: high temperature short time blanching and the effect of firming agent during soaking and blanching on the firmness sweet potatoes. The physicochemical analysis was conducted which includes texture measurement by Steven Analyzer, TSS, peroxidase test and ascorbic acid determination. The texture of blanched sweet potatoes increases with the increased of soaking time. The Duncan Multiple Range Test shows that there is significant different ($p<0.05$) on the texture of blanched sweet potatoes at 50°C, 70°C and 90°C using water blanching. For the steam blanching treatment, there is no significant different ($p<0.05$) in the texture at 105°C, 110°C and 115°C. Combination of water and steam blanching shows that there is no significant different ($p<0.05$) in the texture. High temperature-short time by steam blanching at 105°C/9minutes is effective to inactivate peroxidase enzymes. The addition of 0.1% CaCl increased the texture of blanched sweet potatoes (181.3 load/g) compared to without addition of CaCl (176.0 load/g). The Duncan's Multiple Range Test shows that there is no significant different on the texture of blanched sweet potatoes soaking in CaCl for 30 minutes, 1 hour and control sample. The increasing of the soaking time to 2-4 hour have significant effect on the texture of sweet potatoes compared to control, 30 minutes and 1 hour soaking time. The increased of calcium chloride concentration will increased the texture of blanched sweet potatoes dramatically than increasing the soaking time. Analysis of ascorbic acid in the blanched sweet potatoes shows that the losses for sample treated with 0.1% and 0.5% CaCl is between 72% to 74%. However, for untreated sample, the loss is slightly lower (66.9%). Total soluble solid content remain the same, before and after (1.6 to 1. 9°Brix) water blanching and steam blanching.

CHAPTER 1

INTRODUCTION

Texture is one of the most important quality attributes affecting the stability of frozen fruits and vegetables. In order to attend the growing demand on frozen vegetables, texture as major quality parameters has to be improved. Excessive softness (which boarders on mushiness in some cases) and a tendency to slough are major problems of most material which have been subjected to disruptive effects of heat processing such as blanching and freezing (Borr & Jasper, 1988).

Freezing is one of the simplest and least time-consuming ways to preserve many vegetables. Frozen vegetables require "blanching" before frozen storage and this can lead to off –flavors, discoloration and texture changes in the vegetables after harvested. The purposes of blanching is for inactivation of enzymes like peroxidase, lipooxygenase etc. which cause a loss of eating and nutritional qualities in vegetables tissues because this enzymes which are responsible for the changes during growth and the ripening, continue to be active (Arthey, 1991).

Various attempts have been made to obtain firmer textured blanched vegetables. It includes the application of a relatively low temperature blanching treatments opposed to high temperature blanching (100°C). Studies conducted by Van Buren et al. (1960)