OSMOTIC DEHYDRATION OF CARROT (*DAUCUS CAROTA*) AND CUCUMBER (*CUCUMIS SATIVUS*)

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OCTOBER 2008

ACKNOWLEDGEMENT

Upon completion of this research, I would like to express my gratitude to many parties. My heartfelt thanks for my supervisor, Pn. Fadhilah bt. Lamun and also my co-supervisor, Dr. Aishah bt. Bujang. They really assist and guide me in many things. I do gain lots of knowledge not only food science and technology information, but also computer knowledge. It helps me a lot since I am not very good in computer technology. Both of them are very supportive. Even though I had gone through problems at first, they are always beside me and able to lend me their hands when needed.

Thanks to all the laboratory assistance including Pn. Sit Mahani, Pn. Norahiza, Cik Hariyah, En. Fazli, Cik Nur Syuhada and En. Osman. I really appreciate their assistance, cooperation and support in making this research successful.

Last but not least, a special thanks for both of my beloved parents, Nik Shahiran b. Nik Abdul Majid and . Without them, I would not be the person I am today. Both of them really support and motivate me a lot in everything I do. Beside that, I would like to thank both of my sisters, Nik Faranas Suraya and Nik Faranor Delaila who became my entertainer when I am down. Also not forgotten, thanks to all of my friends and others directly or indirectly involved in the completion of this research.

Nik Faradiba

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ABSTRACT

OSMOTIC DEHYDRATION OF SELECTED VEGETABLES

This study aimed on producing a new osmotic-dehydrated product from two types of vegetables which are carrot (*Daucus carota*) and cucumber (*Cucumis sativus*). Prior to osmotic dehydration treatment, both vegetables were treated with calcium pre-treatment ($CaCl_2$) with different concentration based on formulation. This study is also aimed to evaluate the effect of calcium pretreatment before osmotic dehydration on physical properties including hardness, gumminess and chewiness of candied vegetables beside calcium content in candied vegetables. Sensory evaluation on certain attributes such as hardness, sweetness, sourness, colour, chewiness, appearance and overall acceptability of vegetable snacks was conducted by 50 selected panelists. After analysis, it shows that the calcium pre-treatment gave an affect on the candied vegetables. The higher the concentration of $CaCl_2$ treated on candied vegetables, the harder the texture of candied vegetables produced. However, the addition of $CaCl_2$ does not really affect the candied vegetables in terms gumminess and chewiness. Colour measurement of the candied vegetables produced was analyses for its lightness value (L), redness (a+) and yellowness (b+). The chroma value was calculated from the results obtained in the colour measurement. From the chroma value, it shows that the candied carrot become more intense after osmotic dehydration with addition of 1% $CaCl_2$ compared to addition of 2% $CaCl_2$. However, the colour of candied cucumber is almost similar. For sensory evaluation, overall acceptability value gave by panelist are very promising, the "like very much" score was obtained for candied cucumber and the "like moderately" for candied carrot. This means that consumer can accept the candied vegetables produced. This new product would be able to encourage people to consume vegetable as snack product.

CHAPTER 1

INTRODUCTION

1.1 Background and problem statement

The method of preservation of food by drying is one of the oldest methods known to man. This method is also known as dehydration method. Dehydration can be defined as the application of heat under controlled conditions to remove the majority of water normally present in food. Therefore, bacteria, yeasts, and molds cannot grow and spoil the food. Beside that, through dehydration, the action of enzymes can be slow down.

Due to revolution in food preservation, in the last decades there has been an increasing interest by a type of dewatering process called osmotic dehydration. In this treatment, the material such as fruit or vegetable is submerged in hypertonic solution to partially remove water from the fruit. The driving force for water removal is the difference in osmotic pressure between the fruit and the solution where the complex cellular structure of the fruit acts as a semi-permeable membrane.