THE EFFECT OF SUGAR CUT AND MAINTENANCE TO THE HARDNESS OF SUGARCANE

NADIANA BT ABDUL WASIL

FACULTY OF AGROTECHNOLOGY AND FOOD SCIENCE
UNIVERSITI MALAYSIA TERENGGANU

2012

Lihat Sebelah

THE EFFECT OF GUAR GUM AND XANTHAN GUM TO THE HARDNESS OF CINCALUK CUBE

By
Nadiana Bt Abdul Nasil

Research Report submitted in partial fulfillment of
the requirement for degree of
Bachelor of Food Science (Food Technology)

Department of Food Science
Faculty of Agrotechnology and Food Science
Universiti Malaysia Terengganu
2012

ENDORSEMENT

The project report entitled **Development of Cincaluk Cube and the Effect of Guar Gum and Xanthan Gum to the Texture of the Cube** by **Nadiana Bt Abdul Nasil,** Matric No. **UK16836** has been reviewed and corrections have been made according to the recommendation by examiners. This report is submitted to the Department of Food Science in partial fulfillment of the requirement of the degree of the Food Science (Food Technology), Faculty of Agrotechnology and Food Science, Universiti Malaysia Terengganu.

(DR. NORIZAH MHD SARBON)
Main supervisors

-Stamp-
DR. NORIZAH MHD. SARBON
Pensyarah
Jabatan Sains Makanan
Fakulti Agroteknologi dan Sains Makanan
Universiti Malaysia Terengganu
21030 Kuala Terengganu

Date: 8/2/2012

DECLARATION

I hereby declare that the work in this thesis is my own except for quotations and summaries which have been duly acknowledge.

Signature : .....

Name : NADIANA BT ABDUL NASIL

Matric No. : UK 16836

Date : 8/2/2012

ACKNOWLEDGEMENT

Foremost, I would like to express my sincere gratitude to my supervisor, Dr. Norizah Mhd. Sarbon for her guidance and information throughout my final year project. I really appreciate the support, patience, motivation, and enthusiasm in helping me doing my laboratory work and writing thesis. I would like to thanks to En. Fisal Ahmad who had been guides me proposing my study and helping me solving the problem in the early stages of my study. They had been working hard in helping me, not only in writing technique but also provided me with direction, technical support and became more of a mentor and friend, than a supervisor.

In addition, I am glad to thank the laboratory assistants who help me a lot in operating the equipment in lab and share their valuable knowledge. They were really supportive and always share their opinion in solving the problem in lab work.

A very special thanks to my family, especially to my late father who always support me from the beginning of the project until the day it submitted. I must acknowledge all my best friends who always cares, encourage and shares everything together.

ABSTRACT

The effect of guar gum and xanthan gum to the cincaluk cube texture at different ratio (guar gum:xanthan gum) (10:0, 2:8, 4:6, 6:4, 8:2, 0:10) were investigated. Prepared cincaluk was dried at 50°C into 10% moisture content by using hot air drying method. The hardness, color, water solubility index, sensory and proximate analysis (moisture, protein, fat, ash and carbohydrate) of cincaluk cubes produced were examined. Hardness determination was measured by using texture analyzer and sensory analysis was conducted by 30 untrained panelists. Sample ratio 8:2 present the highest hardness value (783.01 ± 3.18 g) and the hardness of cincaluk cubes were increased with the increases of guar gum. However, sample with guar gum only (10:0) showed lower hardness value (644.74±1.50 g) than the mixture of guar gum and xanthan gum. There were significantly difference ($p<0.05$) on the hardness values between samples at different ratio. There were no significance different ($p>0.05$) on color different ΔE, between samples at different ratio but the value was consider high. Sample ratio 6:4 showed the highest solubility index (4.45 ± 0.05 %) while sample with xanthan gum only (0:10) showed the lowest solubility index (2.22±0.12 %). Overall acceptance showed that there were significance different ($p<0.05$) between all samples and commercial cincaluk. The proximate values for the cincaluk cubes with different formulation were not significantly different ($p>0.05$) for protein, fat, moisture, ash, and carbohydrate respectively. This study found that ratio 6:4 of guar gum and xanthan gum was the best combination to produce a good texture of cincaluk cube.

ABSTRAK

Kesan penambahan guar gum dan xanthan gum kepada tekstur kiub cincaluk dikaji. Kiub cincaluk dihasilkan dengan mengeringkan cincaluk kepada 10 peratus kandungan air dengan menggunakan pemanasan udara. Kekerasan, warna, indeks kelarutan air, analisis deria dan komposisi (kandungan air, protein, lemak, karbohidrat dan abu) dalam kiub cincaluk dikaji. Kekerasan kiub diukur dengan menggunakan Texture Analyzer dan analisis deria dijalankan ke atas 30 orang panel. Sampel dengan ratio 8:2 menunjukkan nilai kekerasan yang paling tinngi (783.01 ± 3.18 g) dan kekerasan kiub cincaluk didapati meningkat dengan penambahan guar gum tetapi sampel dengan penambahan guar gum sahaja (10:0) mempunyai nilai yang lebih rendah (644.74±1.50 g) berbanding dengan penambahan bersama xanthan gum. perbezaan yang ketara ($p<0.05$) bagi kekerasan kiub. Disamping itu, perubahan warna, ΔE dikaji dan didapati tidak berbeza dengan ketara ($p>0.05$) antara sampel tetapi nilai perubahan warna kiub adalah tinggi menunjukkan warna kiub berbeza dengan cincaluk komersial. Sampel dengan nisbah 6:4 mempunyai index kelarutan air yang paling tinggi (4.45 ± 0.05 %) sementara sampel dengan xanthan gum sahaja menunjukkan nilai paling rendah (2.22±0.12 %). Bagi penilaian deria untuk penerimaan secara keseluruhan menunjukkan perbezaan yang ketara antara kiub dan cincaluk komersial dan purata skor penerimaan masih dalam lingkungan diterima. Komposisi dalam kiub adalah 21.44±0.17, 0.30±0.1, 15.65±1.76, 21.01 ± 0.06 and 39.01±2.23 peratus bagi protein, lemak, kandungan air, abu dan karbohidrat. Kajian ini memdapati bahawa sampel dengan nisbah guar gum dan xanthan gum (6:4) merupakan kombinasi terbaik dalam penghasilan kiub yang mempunyai tekstur yang terbaik.