THE STABILIZATION EFFECT OF XANTHAN GUM AND SORBITOL IN
TEXTURE OF FROZEN TOFU

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The stabilization effect of xanthan gum and sorbitol in texture of frozen idli / Hemawathy Hari Dass.

Lihat Sebelah

THE STABILIZATION EFFECT OF XANTHAN GUM AND SORBITOL IN TEXTURE OF FROZEN IDLI

By

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Research Report submitted in partial fulfillment of the requirements for the degree of Bachelor of Food Science

(Food Technology)

DEPARTMENT OF FOOD SCIENCE

FACULTY OF AGROTECHNOLOGY AND FOOD SCIENCE

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ENDORSEMENT

The project entitled **The stabilization effect of Xanthan gum and Sorbitol to maintain the texture of frozen idli** by **Hemawathy Hari Dass,** Matric No. **UK 16768** has been reviewed and corrections have been made according to the recommendations by examiners. This report is submitted to the Department of Food Science in partial fulfillment of the requirement of the degree of Bachelor of Food Science (Food Technology), Faculty of Agrotechnology and Food Science, University Malaysia Terengganu.

Dr. Norizah Bt Mhd Sarbon

Main Supervisor

Date: 2/2/2012

DECLARATION

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

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ABSTRACT

This research was carried out to study the effect of adding xanthan gum as well as sorbitol at various concentrations to maintain the texture of frozen idli for four weeks storage. The study was conducted for the concentration of xanthan gum and sorbitol at 0.2% and 0.3%. Further addition were done with the mixture of both xanthan gum and sorbitol at the concentration of 0.2%, at various ratio [xanthan gum to sorbitol (1:3), (1:2) and (3:1)]. The experiment was repeated for the mixture at concentration 0.3%. The attributes of texture (hardness, springiness, cohesiveness, chewiness, gumminess and resilience) of the idli were observed consecutively for four weeks using the TA – TX texture analyzer. The highest value of hardness was 5266.65g after four weeks storage. The attributes of springiness, cohesiveness, gumminess and chewiness were seemed to have a decreasing trend as the storage time increased. The color of the idli for four weeks storage was also studied for the L* a* b* value using Minolta Colorimeter. There were no significant changes ($p > 0.05$) for the L* value of the idli. The proximate analysis in the control sample of idli was carried out and it showed that idli contained 58% ±10.1 of moisture, 0.7%± 0.07of protein, 0.4% ±0.08 of fat and 0.7% ± 0.04 of ash in the control sample of idli. The sensory study on the fresh and frozen storage of idli showed that there were no difference for the surface texture and hardness attributes. The sensory scores were not coherent with the texture analysis using texture analyzer due to the less sensitivity of humans compared to the machines. As a conclusion, the sample of 0.3% at the ratio of [(xanthan:sorbitol)(1:2)] was highly accepted. It showed that there were no significant difference ($p > 0.05$) for most attributes with the control sample and has the score that ranges in the highly accepted value of the sensory evaluation.

ABSTRAK

Penyelidikan ini telah dijalankan untuk mengkaji kesan penambahan gum xanthan serta sorbitol untuk mengekalkan tekstur idli yang disejukbeku pada kepekatan yang berbeza bagi tempoh penyimpanan empat minggu. Kepekatan gum yang digunakan adalah pada 0.2%, 0.3% serta penambahan sorbitol pada kepekatan 0.2% dan 0.3%. Penambahan kedua – dua aditif telah dijalankan pada kepekatan 0.2% dan pada nisbah yang berbeza iaitu [xanthan gum to sorbitol(1:3), (1:2) and (3:1)]. Atribut tekstur seperti kekerasan, kekenyalan, kelekatan, kunyahan serta daya tahan idli dikaji menggunkan penganalisis tekstur TA – TX secara berturut – turut selama empat minggu.Didapati bahawa kekerasan yang paling tinggi adalah pada sampel kawalan pada minggu keempat penyimpanan iaitu 5266.65g ± 665.4. Atribut – atribut yang lain didapati menunjukkan tren yang menurun dengan tempoh penyimpanan. Warna idli juga telah dikaji untuk tempoh penyimpanan selama empat minggu bagi nilai L* a* b* dengan menggunakan Minolta Colorimeter. Didapati tiada perubahan yang berlaku pada nilai L*pada idli yang dikaji selama empat minggu. Analisis proksimat telah dijalankan dan didapati bahawa idli mengandungi kandungan air 58% ±10.1, protein sebanyak 0.7%± 0.07, sebanyak 0.4% ±0.08 kandunagn lemak dan kandungan abu sebanyak 0.7% ± 0.04 dalam sampel kawalan idli. Analisis sensori menunjukkan tiada perubahan yang nyata bagi sampel yang baru dimasak serta yang disejukbeku bagi atribut permukaan idli serta kekerasan. Pengskoran sensori tidak selari dengan data yang diperoleh menggunakkan penganalisis tekstur. Ini mungkin disebabkan oleh deria manusia yang kurang sensitive terhadap perubahan yang berlaku berbanding dengan dengan yang dikaji melalui mesin. Kesimpulannya, sample pada kepekatan 0.3% at the ratio of [(xanthan:sorbitol)(1:2)] merukan sampel yang menunjukkan tiada perubahan yang nyata dengan sampel kawalan dan memperoleh skor yang berada dalam lingkugan terbaik bagi atribut tertentu.