

DEVELOPMENT OF ENERGYBAR INCORPORATION TUNUN BETIK  
*Cucumis melo*) HARD JELLY AND DRIED MANGO  
*(Mangifera indica)*

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UNIVERSITI MALAYSIA TERENGGANU  
2008



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**DEVELOPMENT OF ENERGY BAR INCORPORATION *TIMUN*  
*BETIK* (*Cucumis melo*) HARD JELLY AND DRIED MANGO  
(*Mangifera indica*)**

**By  
Norasiah bt Tajuddin**

**Research Report submitted in partial fulfilment of  
the requirements for the degree of  
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**Department of Food Science  
FACULTY OF AGROTECHNOLOGY AND FOOD SCIENCE  
UNIVERSITI MALAYSIA TERENGGANU  
2008**



FAKULTI AGROTEKNOLOGI DAN SAINS MAKANAN  
UNIVERSITI MALAYSIA TERENGGANU

**PENGAKUAN DAN PENGESAHAN LAPORAN  
PROJEK PENYELIDIKAN I DAN II**

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk:

DEVELOPMENT OF ENERGYBAR INCORPORATION TIMUN BETIK  
(Cucumis melo) HARD JELLY AND DRIED MANGO (Mangifera indica)

oleh NORASIAH BT TAJUDDIN, No.Matrik 4611841

telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini  
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## DECLARATION

I hereby declare that this research project is based on my original work except for quotations and summaries which have been duly acknowledged. I also declare that this thesis has not been previously or concurrently submitted for any degree at University Malaysia Terengganu (UMT) or other institutions.

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## ABSTRACT

This study was conducted to develop two new products which are *timun betik* hard jelly and energy bar incorporation *timun betik* hard jelly and dried mango. This study also aims to determine the sensory acceptance of *timun betik* hard jelly and energy bar and to determine the physical analysis and proximate analysis of acceptable energy bar. The *timun betik* hard jellies were prepared using four different formulations which differ in terms of fruit juice and water content. Both variables were calculated as 100% in this preparation. The levels of fruit juice used were decreased for each formulation from 100%, 85%, 70%, and 55%. While in preparation of energy bar, there are five different formulations which differ in percentage of hard jelly and dried mango used. Both variable percentages were calculated for 100%. Level of hard jelly used was increased for each formulation from 20%, 35%, 50%, 65% and 80%. In contrast for dried mango decreased for each formulation from 80%, 65%, 50%, 35% and 20%. The sensory evaluation for *timun betik* hard jelly was carried out first before doing the sensory acceptance of energy bar to choose the best formulation and used in preparation of energy bar. An affective test using the 7-point hedonic scale was conducted for both sensory. Statistical Analysis System (SAS) was used to determine the Analysis of Variance (ANOVA) and Duncan's Multiple Range Test (DMRT) at probability level of 5%. The acceptable energy bar was analyzed for proximate analysis and physical analysis. Results show that, for sensory acceptance of *timun betik* hard jelly show that most of attributes there is no significant difference among formulation. Formulation A was used in preparation energy bar in terms of Formulation A had highest mean score for each attribute. Result for sensory acceptance of energy bar show that the formulation A was accepted by consumer. The result for color analysis indicates that the energy bar had brighter and more yellowish color. While the result for proximate analysis were 11.21% of moisture content, 14.9% of ash content, 7.1% of protein content, 2.07% of fat content, 2.73% of fiber content and 61.99% of carbohydrate content. Result in this study indicate that the energy bar can be classified as energy bar high in carbohydrate because the carbohydrate content in this energy bar was highest than protein and fat content.



## ABSTRAK

Kajian ini dilakukan untuk menghasilkan dua produk iaitu jeli keras daripada timun betik dan '*energy bar*' daripada gabungan jeli keras dan mangga kering. Kajian ini juga bertujuan untuk mengenalpasti tahap penerimaan pengguna terhadap produk tersebut dan untuk menilai ciri-ciri kimia dan fizikal bagi '*energy bar*' yang paling diterima oleh pengguna. Jeli keras dari timun betik dihasilkan melalui 4 formulasi yang mana berbeza pada peratusan penggunaan jus buah dan kuantiti air. Kedua pemboleh ubah dikira sebagai seratus peratus dalam penyediaan produk ini. Peratus penggunaan jus buah menurun bagi setiap formulasi dari 100%, 85%, 70% dan 55%. Manakala dalam penyediaan '*energy bar*', terdapat lima formulasi yang berbeza pada penggunaan jeli keras dan mangga kering. Kedua-dua pemboleh ubah juga dikira sebagai seratus peratus. Peratus penggunaan jeli keras meningkat dengan setiap formulasi dari 20%, 35%, 50%, 65% dan 80%. Berbeza pula dengan penggunaan mangga kering, menurun dengan setiap formulasi dari 80%, 65%, 50%, 35% dan 20%. Penilaian deria untuk jeli keras daripada timun betik dilakukan terlebih dahulu untuk menentukan formulasi yang terbaik dan digunakan dalam penyediaan '*energy bar*'. Ujian afektif menggunakan skala hedonik 7-poin dilakukan bagi kedua-dua penilaian produk. Statistical Analysis System (SAS) digunakan untuk melakukan analisis varians (ANOVA) dan Duncan's Multiple Range Test (DMRT). Bagi formulasi '*energy bar*' yang diterima akan dilakukan analisis kimia dan analisis fizikal. Keputusan untuk penerimaan pengguna terhadap jeli keras menunjukkan kebanyakan ciri-ciri yang dinilai tidak mempunyai perbezaan secara signifikan antara setiap formulasi. Formulasi A digunakan dalam penyediaan '*energy bar*' kerana formulasi tersebut mempunyai skor min yang tertinggi berbanding formulasi lain bagi setiap ciri yang dinilai. Manakala bagi penilaian tahap penerimaan '*energy bar*', formulasi A adalah lebih diterima. Analisis warna bagi '*energy bar*' menunjukkan produk ini mempunyai warna yang gelap dan lebih kepada warna kekuningan. Manakala untuk penilaian secara kimia, kandungan kelembapan dalam produk adalah 11.21%, kandungan abu adalah 14.9%, kandungan protein adalah 7.1%, kandungan lemak adalah 2.07%, kandungan serabut adalah 2.73% dan kandungan karbohidrat adalah 61.99%. Keputusan menunjukkan '*energy bar*' di kelaskan dalam '*energy bar*' yang tinggi dengan karbohidrat di sebabkan kandungan karbohidratnya adalah tinggi daripada kandungan protein dan lemak