SODIUM RELEASE FROM SAGO AND TAPIOCA FLOUR
MIXTURE OF (HYDROGEL/XEROGEL) WITH DIFFERENT HEAT
TREATMENT

MASDIRONI BINTI NOOR HASSAN

FACULTY OF AGROTECHNOLOGY AND FOOD SCIENCE
UNIVERSITI MALAYSIA TERENGGANU
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Sodium release from sago and tapioca flour mixture of 'keropok lekor' with different heat treatment / Hasdaraini Mohd Hassan.

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# SODIUM RELEASE FROM SAGO AND TAPIOCA FLOUR MIXTURE OF 'KEROPOK LEKOR' WITH DIFFERENT HEAT TREATMENT

By

**Hasdaraini binti Mohd Hassan**

**Research Proposal submitted in partial fulfillment of the requirements for the degree of Bachelor of Food Science (Food Technology)**

**DEPARTMENT OF FOOD SCIENCE**

**FACULTY AGROTECHNOLOGY AND FOOD SCIENCE**

**UNIVERSITI MALAYSIA TERENGGANU**

**2012**

# ENDORSEMENT

The project report entitled **Sodium Release From Sago And Tapioca Flour Mixture of 'Keropok Lekor' With Different Heat Treatment** by **Hasdaraini binti Mohd Hassan,** Matric No. **UK 18287** has been reviewed and correlations have been made according to the recommendations by examiners. This report is submitted to the Department of Food Science, Faculty of Agrotechnology and Food Science, Universiti Malaysia Terengganu.

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Dr. Yusnita bte Hamzah

**DR. YUSNITA HAMZAH**
*Lecturer*
Department of Food Science
Faculty of Agrotechnology and Food Science
Universiti Malaysia 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 acknowledged.

Signature : ................................

Name : *HASOARAINI MOHO HASSAN*

Matric No. : *UR 18287*

Date : *8th FEBRUARY 2012*

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# ACKNOWLEDGEMENT

# ABSTRACT

'Keropok lekor' is a traditional food snack produced in Malaysia and is a very popular especially in Terengganu. The main purpose of this study was to analyze the percentage of sodium (Na) release from 'keropok lekor' made of different portions of sago and tapioca flour and treated with different heat treatments. Besides that, the determination of properties such as chemical, physical, structural and saltiness perception level of the 'keropok lekor' were also carried out. There were five formulations of 'keropok lekor' with different ratio of sago and tapioca flour, treated with three different heat treatments, which were boiled, steamed, and fried. The control formulation used was 50% of tapioca flour mixed with 50% of sago flour. The 'keropok lekor' mixed contained five different portions of sago and tapioca flour which were 10:90, 30:70, 50;50 (control), 70;30 and 90:10, respectively. It was found that the heat treatment and flour portion ratio significantly affected the chemical, physical, and structural of 'keropok lekor' ($p < 0.05$). However, no interaction between these factors shown for protein, fat, hardness, and color properties. Fried cooking method provided high fat content for all samples with sample A (50% sago:50% tapioca) showed the highest value (4.7%). Six samples (including control) with low fat and high protein content were selected for sensory evaluation. Sensory evaluation and instrumental analysis using Atomic Absorption Spectrophotometer (AAS) indicated that the 'keropok lekor' with steaming and frying methods and formulation with higher in tapioca or sago flour portion gained high saltiness perception level. In summary, these formulations with steamed and fried cooking method were suitable in the production of 'keropok lekor' using less salt in the ingredient.

## ABSTRAK

Keropok lekor adalah makanan ringan tradisional yang dihasilkan di Malaysia dan sangat popular terutamanya di Terengganu. Tujuan utama kajian ini adalah untuk menganalisis peratusan natrium (Na) terbebas dari keropok lekor yang dibuat daripada formulasi tepung sagu dan ubi yang berbeza dan dimasak dengan kaedah yang berbeza. Selain itu, penentuan sifat kimia, fizikal, dan struktur keropok lekor serta pengesanan rasa masin juga dijalankan. Terdapat lima formulasi keropok lekor menggunakan nisbah tepung sagu dan ubi yang berbeza serta dimasak dengan kaedah yang berbeza iaitu mengukus,merebus dan menggoreng. Formulasi kawalan adalah formulasi dengan 50% tepung sagu dan 50% tepung ubi. Formulasi keropok lekor dengan campuran tepung sagu dan ubi yang digunakan dalam kajian ini adalah 10:90, 30:70, 50:50 (kawalan), 70:30 dan 90:10. Didapati bahawa kaedah memasak dan nisbah tepung mempengaruhi sifat kimia, fizikal, dan struktur keropok lekor (p<0.05). Walau bagaimanapun, didapati tidak ada interaksi antara dua faktor ini bagi pengukuran protein, lemak, kekerasan, dan ciri warna keropok lekor. Sampel yang digoreng menunjukkan kandungan lemak yang tinggi bagi semua sampel dengan sampel A (50% sagu:50% ubi) menunjukkan nilai tertinggi (4.7%). Enam sampel (termasuk kawalan) iaitu dengan kandungan lemak yang rendah serta kandungan protein yang tinggi dipilih bagi analisis penilaian deria. Keputusan diperolehi dari penilaian deria dan kaedah analisis menggunakan Spektrofotometer Penyerapan Atom (AAS) menunjukkan bahawa keropok lekor dengan kaedah kukus dan goreng serta terdiri daripada kandungan tepung sagu atau tepung ubi yang tinggi mempunyai tahap persepsi kemasinan yang tinggi. Oleh itu, formulasi ini dengan kaedah kukus dan goreng adalah sesuai bagi penghasilan keropok lekor dengan penggunaan garam yang sedikit.