EFFECTS OF TOMATO (*Lycopersicon esculentum L.*)
PUREE SUBSTITUTION WITH ROSELLE (*Hibiscus*
sabdariffa L.) WASTE IN SWALLOW ON THE
PHYSICOCHEMICAL CHARACTERISTICS AND THEIR
ACCEPTANCE LEVEL

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FACULTY OF AGROTECHNOLOGY AND FOOD SCIENCE
UNIVERSITI MALAYSIA TERENGGANU

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Effects of tomato (Lycopercison esculentum L.) puree substitution with roselle (hibiscus sabdariffa L.) waste in chili sauce on the physicochemical characteristics and their acceptance level / Aloha Ngah

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EFFECTS OF TOMATO *(Lycopercison esculentum L.)* PUREE SUBSTITUTION WITH ROSELLE *(Hibiscus sabdariffa L.)* WASTE IN CHILI SAUCE ON THE PHYSICOCHEMICAL CHARACTERISTICS AND THEIR ACCEPTANCE LEVEL

By
Aloha Binti Ngah

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
UNIVERSITI MALAYSIA TERENGGANU
2012

ENDORSEMENT

The project report entitled **Effects of tomato *(Lycopercison esculentum L.)* puree substitution with Roselle *(Hibiscus sabdariffa L.)* waste in chili sauce on the physicochemical characteristics and their acceptance level** by **Aloha Binti Ngah,** Matric No. **UK17571** has been review and corrections by examiners 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, Universiti Malaysia Terengganu.

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DECLARATION

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

Signature : 

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Date : 09/02/2012

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ABSTRACT

This study was determined the effects of tomato *(Lycopercison esculentum L.)* puree substitution with Roselle *(Hibiscus sabdariffa L.)* waste in chili sauce on the physicochemical properties such as pH, °Brix value, viscosity, color, proximate and ascorbic acid analysis. The pH value obtained for chili sauces were between 3.94-2.65, the range of °Brix value was 30.63-22.7, and the range for viscosity was 9009-15284 cP. The proximate analysis of Roselle waste were conducted before proceed to the production of chili sauce. The Roselle *(Hibiscus sabdariffa L.)* waste contained 92.31% of moisture, 3.60% of carbohydrate, 0.38% of protein, 1.32% of fat and 2.30% of fiber. Five different formulations of chili sauce were produced with percentage of Roselle waste to tomato puree, sample A (0:100), sample B (25:75), sample C (50:50), sample D (75:25) and sample E (100:0). All chili sauce produced was determined on their physical properties. Viscosity for all samples were increased from sample A to sample E meanwhile for pH value, it was decreased for all sample due to the citric and malic acid content in Roselle waste. Color of sample E was darker due to the anthocyanin in Roselle that give brilliant red color to the chili sauces. In addition, sensory evaluation demonstrated that chili sauce from sample B received the highest score in term of color, aroma, taste, viscosity and overall acceptance. Proximate analysis of sample A (control) and sample B (accepted) formulation was also determined. The proximate analysis of both sample shown that sample B had high fat, fiber, carbohydrate, and ash content compared to the sample A. Besides, ascorbic acid analysis obtained Roselle waste had low level of vitamin C compared with vitamin C in fresh Roselle calyces due to the degradation of vitamin C when exposure to heat whereas ascorbic analysis for sample A and sample B, the vitamin C was high in sample B compared to the sample A.

ABSTRAK

Kajian ini adalah untuk menentukan kesan penggantian pati tomato *(Lycopercison esculentum L.)* dengan lebihan Roselle *(Hibiscus sabdariffa L.)* ke atas ciri-ciri fizikal seperti pH, nilai °Brix, kelikatan, warna, komposisi kimia and analisis asid askorbik. Nilai pH yang diperoleh untuk sos cili adalah antara 3.94-2.65, nilai °Brix adalah diantara 30.63-22.7, dan julat untuk kelikatan pula adalah antara 9009-15284 cP. Komposisi kimia untuk lebihan Roselle *(Hibiscus sabdariffa L.)* di analisis sebelum penghasilan sos cili dilakukan. Lebihan Roselle *(Hibiscus sabdariffa L.)* mengandungi kadar kelembapan sebanyak 92.31%, 3.60% karbohidrat, 0.38% untuk kandungan protein, 1.32% untuk kandungan lemak dan mengandungi sebanyak 2.30% kandungan serat. Lima formulasi sos cili yang berbeza telah dihasilkan dengan menggunakan peratusan lebihan Roselle kepada pati tomato, sampel A (0:100), sampel B (25:75), sampel C (50:50), sampel D (75:25) and sampel E (100:0). Kesemua sampel sos cili yang dihasilkan telah ditentukan ciri-ciri fizikalnya. Kepekatan untuk kesemua sampel telah meningkat dari sampel A kepada sampel E manakala untuk nilai pH, ianya telah meurun untuk semua sampel disebabkan oleh kandungan asid citric dan asid malik yang terdapat dalam lebihan Roselle. Nilai untuk warna untuk sampel E mempunyai warna yang lebih gelap dalam sos cili disebabkan oleh kandungan anthocyanin dalam Roselle yang member warna merah gelap kepada sos cili. Tambahan itu, penilaian deria menunjukkan sos cili sampel B mencapai skor tertinggi dari segi warna, rasa, kelikatan dan penerimaan keseluruhan. Analisis komposisi kimia untuk formulasi sampel A (kawalan) dan sampel B (yang diterima) juga ditentukan. Analisi komposisi kimia untuk kedua-dua sampel menunjukkan sampel B mengandungi kandungan lemak, serat, karbohidrat dan abu yang tinggi berbanding dengan sampel A. Di samping itu, analisis kandungan asid askorbik yang diperolehi menunjukkan lebihan Roselle mengandungi kandungan vitamin C yang rendah berbanding dengan kandungan vitamin C dalam kaliks Roselle segar disebabkan oleh penurunan kandungan vitamin C apabila didedahkan kepada haba manakala untuk analisis asid askorbik untuk sampel A dan sampel B, kandungan vitamin C adalah tinggi dalam sampel B berbanding dengan sampel A.