

EFFECTS OF GIBBERELIC ACID INCORPORATION ON THE
CHARACTERISTICS OF THE FURFURAL MUGGET

STUDIED BY MOHD. RIZAL

FACULTY OF AGRICULTURE AND FOOD SCIENCE
UNIVERSITI MALAYSIA TERENGANU
KEMAMAN, TERENGANU

2011

**EFFECTS OF SURIMI INCORPORATION ON THE CHARACTERISTICS OF
THE PUMPKIN NUGGET**

By

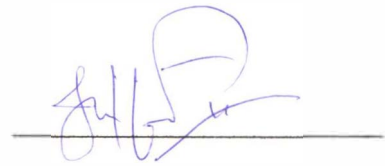
SALBIAH BT MOHD RAZALI

**RESEARCH PROJECT submitted in partial fulfillment of the requirements for the
Degree of Bachelor of Food Science
(Food Service and Nutrition)**

**FACULTY OF AGROTECHNOLOGY AND FOOD SCIENCE
UNIVERSITI MALAYSIA TERENGGANU
MENGABANG TELIPOT
2007**

DECLARATION

I hereby declare that the thesis is based on my original work except for quotations and citation which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any degree at UMT or other institutions.



SALBIAH MOHD RAZALI

Date: 21 JUNE 2007

Approved by

(ASSOC. PROF DR. AMIZA MAT AMIN)

Date:

ACKNOWLEDGEMENTS

Alhamdulillah to the Almighty Allah S.W.T for giving me strength, patience and capability to complete this project and thesis write up.

Among the most difficult words to write are those that express the depth of our gratitude to many dedicated people whose efforts have made this final year project possible.

My deepest thanks and appreciation go to my supervisor, Assoc. Prof. Dr. Amiza Mat Amin for her guidance, encouragement, criticisms and invaluable knowledge in assisting me along the way. Your commitment will always be remembered.

A special thanks to all the lecturers from Department of Food Science – Mr. Khairi, Mrs. Zamzahaila, Mrs. Faridah, Dr. Amir, Mr. Aziz, Ms Norizah and Mrs Shazmin. Thanks for their guidance and recommendation that helped me a lot in completing this final year project. Besides that, it is unforgettable to forward my acknowledgement to all the lab assistant of Department of Food Science especially Mrs. Suzana, Mrs. Fadlina, Ms Nasrenim, Mrs. Aniza, Ms Rose, Mrs. Faridah and Mr. Zamani. Thanks for your kindness and cooperation.

Sincere gratitude dedicated to *abah, mak* and all my family members for all their love, concern and support. Thank you for everything. I'm very appreciating that.

Last but not least, I want express my acknowledgement to all my course mates and friends to lend me a hand throughout my process in finishing this project. Thank you for the cooperation.

EFFECTS OF SURIMI INCORPORATION ON THE CHARACTERISTICS OF THE PUMPKIN NUGGET

ABSTRACT

Pumpkin or *Cucurbita maxima* are a kind of local vegetable product which has great nutritional and health protective values. Surimi is concentrated myofibrillar protein obtained from mechanically deboned fish flesh. Due to their unique textural properties and nutritional value, surimi has the potential to be a good source to improve the texture of pumpkin nuggets. The objective of this study is to determine the effect of surimi incorporation on the characteristics of the pumpkin nuggets. Twelve formulations were developed where six formulations were prepared with pumpkin with rind (S) and six formulations were prepared with pumpkin without rind (W). The study includes assessment of texture, color, cooking loss during frying, diameter shrinkage and sensory evaluation using different levels of surimi incorporation which were 0% as a control nugget, 10%, 20%, 30%, 40% and 50%. The determination of crude protein content, oil uptake, crude fiber content and moisture content in pumpkin nuggets also were also determined. It was found that incorporation of 50% surimi made the texture firmer than control nugget. There was a significant difference ($p < 0.05$) for both S and W nugget in texture. Increased surimi also increases the color lightness of pumpkin nuggets color. The minimum changes of diameter shrinkage and cooking loss were also observed with increased surimi level. However, between same levels of surimi incorporation, there was no significant difference for diameter shrinkage and cooking loss. Besides, crude protein content and moisture content increased with increased surimi while the crude fiber content and oil uptake decreased with increase in surimi. The diameter shrinkage, cooking loss and oil uptake was lower for formulation S compared to formulation W. Formulation S had more fiber than W while moisture content in S was higher than W. The most acceptable nuggets were 50% W nugget.

KESAN PENAMBAHAN SURIMI TERHADAP CIRI-CIRI NUGGET LABU

ABSTRAK

Labu atau *Cucurbita maxima* adalah sayur tempatan yang mempunyai nilai pemakanan dan perlindungan kesihatan yang sangat baik. Surimi ialah pekatan protein myofibrillar yang diperolehi secara mekanikal daripada isi ikan tanpa tulang. Berdasarkan tekstur yang unik dan nilai pemakanan, surimi berpotensi sebagai sumber yang terbaik untuk memperbaiki tekstur bagi nugget labu. Objektif kajian ini adalah untuk menentukan kesan penambahan surimi terhadap ciri-ciri nugget labu. Dua belas formulasi dimana enam formulasi menggunakan kulit labu (S) dan enam formulasi tidak menggunakan kulit labu (W) telah dibangunkan. Kajian yang dijalankan mencakupi penilaian tekstur, warna, penentuan kadar kehilangan jisim semasa menggoreng, pengecutan pada diameter nugget, dan penilaian deria dengan menggunakan peratus penambahan surimi yang berbeza iaitu 0% sebagai nugget kawalan, 10%, 20%, 30%, 40% dan 50%. Penentuan kandungan protein kasar, pengambilan minyak semasa menggoreng, kandungan serat kasar dan kandungan lembapan dalam nugget labu turut dikaji. Ujian Keputusan menunjukkan penambahan 50% surimi menjadikan tekstur lebih teguh daripada nugget kawalan. Terdapat perbezaan yang bererti ($p < 0.05$) dalam tekstur bagi kedua-dua formulasi. Penambahan surimi juga menyebabkan peningkatan dalam kecerahan (L^*) bagi warna nugget. Perubahan yang minimum dalam pengecutan dan kehilangan jisim dengan penambahan surimi. Walaubagaimanapun, bagi aras penambahan surimi yang sama, tiada perbezaan yang bererti bagi pengecutan diameter dan kehilangan jisim nugget. Selain itu, kandungan protein dan lembapan meningkat dengan penambahan surimi manakala kandungan serat dan pengambilan minyak berkurangan dengan penambahan surimi. Pengecutan diameter, kehilangan jisim dan pengambilan minyak lebih kecil bagi S jika dibandingkan dengan W. Formulasi S mengandungi serat dan kandungan lembapan yang lebih tinggi berbanding W. Penambahan 50% surimi bagi formulasi W lebih diterima oleh pengguna.