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Universiti Malaysia Terengganu.



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Effects of pH on the properties of film from cobia (*Rachycentron canadum*) myofibrillar muscle / Suhana Jusoh.

PUSAT PEMBELAJARAN DIGITAL SULTANAH NUR ZAHIRAH  
UNIVERSITI MALAYSIA TERENGGANU (UMT)  
21030 KUALA TERENGGANU

1100090240	

Lihat Sebelah

**HAK MILIK**  
PUSAT PEMBELAJARAN DIGITAL SULTANAH NUR ZAHIRAH

EFFECT OF pH ON THE PROPERTIES OF FILM FROM COBIA (*Rachycentron  
canadum*) MYOFIBRILLAR MUSCLE

By  
Suhana binti Jusoh

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 **Effect of pH on the properties of film from cobia (*Rachycentron canadum*) myofibrillar muscle** by **Suhana binti Jusoh**, Matric No. **UK17992** has been reviewed and corrections have been made according to recommendations by examiners. This report is submitted to 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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(Assoc. Prof. Dr. Amiza Bt. Mat Amin)  
Main supervisor

PROF. MADYA DR. AMIZA  
Timbalan Dekan (Hal Ehwal Pelajar)  
Fakulti Agroteknologi dan  
Universiti Malaysia Terengganu  
21030 Kuala Terengganu

Date: 9/2/12

## 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 : SUHANA BINTI JUSOH  
Matric No. : UK 17492  
Date : 09/02/2012

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## ABSTRACT

The objective of this study was to determine the effect of pH of the film-forming solutions on the properties of film made from cobia myofibrillar muscle. Films from cobia (*Rachycentron canadum*) myofibrillar muscle were obtained by casting technique. The films have been successfully formed at pH of the film-forming solutions 3, 4, 7, 11 and 12. The thickness of cobia myofibrillar muscle films produced at different pH of film-forming solutions varied slightly. However, the thickness of the films was quite low. In terms of mechanical properties, different pH of the film-forming solutions affected the tensile strength of the cobia myofibrillar muscle films. The highest tensile strength was made at extreme alkaline pH (pH 12) while the lowest tensile strength was made at neutral pH (pH 7). Acidic and alkaline pHs improved the tensile strength of cobia myofibrillar muscle film. However, on the other hand, no significant effect of pH of the film-forming solutions was observed on elongation at break (EAB %) of the cobia myofibrillar muscle films. Water vapor permeability (WVP) also was not affected by pH of the film-forming solutions. The films become darker as the pH of film-forming solutions increased as evidenced by the increase in  $L^*$  -value. Increase pHs have increased UV and visible light barrier properties. The highest film solubility was given at pH 12. Some pores were evident for film prepared at pH 3 due to the presence of bubble during film preparation. The distribution of fat structures also was detected in the microstructure of films due to ineffective washing process.



## ABSTRAK

Tujuan utama kajian ini dijalankan adalah untuk menentukan kesan pH yang berbeza larutan yang membentuk filem terhadap ciri-ciri filem yang terhasil. Filem daripada isi cobia (*Rachycentron canadum*) telah dihasilkan melalui kaedah casting. Filem tersebut telah berjaya dihasilkan pada pH 3, 4, 7, 11 dan 12. Ketebalan filem yang terhasil mempunyai sedikit perbezaan antara pH yang berbeza. Walaubagaimanapun, filem yang terhasil agak nipis. Perbezaan pH larutan yang membentuk filem mempengaruhi kekuatan tarik (*tensile strength*) filem tersebut. Kekuatan tarik paling tinggi terhasil pada pH 12 manakala kekuatan tarik paling rendah pada pH 7. pH berasid dan pH beralkali meningkatkan kekuatan tarik filem. Walaubagaimanapun, peratus pemanjangan (EAB %) tidak dipengaruhi oleh pH larutan yang membentuk filem. Ketelapan wap air (WVP) juga tidak dipengaruhi oleh pH. Warna filem yang terhasil semakin gelap dengan peningkatan pH larutan yang membentuk filem. Peningkatan pH meningkatkan lagi sifat halangan UV dan cahaya nampak. Kelarutan filem paling tinggi pada pH 12. Terdapat liang pada permukaan filem yang dihasilkan pada pH 3 disebabkan kehadiran buih semasa proses pembentukan filem. Kehadiran struktur lemak juga dapat dikesan dalam mikrostruktur filem disebabkan proses pembasuhan yang kurang berkesan.