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Properties of protein based film from gelatin of skin and bone of red tilapia (*Oreochromis niloticus*) as influenced by fish freshness / Nora Farhana Abdul Hakim Mustafa Kamal.

PUSAT PEMBELAJARAN DIGITAL SULTANAH NUR ZAHIRAH
UNIVERSITI MALAYSIA TERENGGANU (UMT)
210 3 KUALA TERENGGANU

1100090226		

Lihat Sebelah

HAK MILIK
PUSAT PEMBELAJARAN DIGITAL SULTANAH NUR ZAHIRAH

**PROPERTIES OF PROTEIN BASED FILM FROM GELATIN OF SKIN AND BONE OF RED
TILAPIA (*Oreochromis niloticus*) AS INFLUENCED BY FISH FRESHNESS**

BY

NORA FARHAINA BINTI ABDUL HAKIM MUSTAFA KAMAL

**Research Report submitted in partial fulfilment 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**

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: Nora Farhaina Binti Abdul Hakim Mustafa Kamal

Matric no: UK17416

Date: 7/2/2012

ENDORSEMENT

The project report entitled **Properties of protein based film from gelatin of skin and bone of red tilapia (*Oreochromis niloticus*) as influenced by fish freshness** by **Nora Farhaina Binti Abdul Hakim Mustafa Kamal**, matric number **UK17416** has been reviewed and corrections have been made according to the recommendation by examiner. This report is submitted to the Department of Food Science (Food Technology), Faculty of Agrotechnology and Food Science Universiti Malaysia Terengganu.



(Puan Nizaha Juhaida Mohamad)

Main supervisor

Stamp:

NIZAHA JUHAIDA MOHAMAD
Pensyarah
Jabatan Sains Makanan
Fakulti Agroteknologi dan Sains Makanan
Universiti Malaysia Terengganu
21030 Kuala Terengganu

Date:

7/2/2012

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ABSTRACT

The effect of storage time on the properties of gelatin film from skin and bone of red tilapia was investigated in this study. Fish were stored for 0, 7 and 14 days in iced storage. After storage, the skin and bone were obtained for extraction of gelatin. The gelatin yield of skin was increase as day storage increase (day 0; 7.3%, day 7; 7.96% and day 14; 15.42%) while for gelatin yield of bone decreased as day storage increased (day 0; 2.2%, day 7; 2.8%, day 14; 2.34%). Generally, films prepared from fish stored in ice for a longer time became less transparent, darker and more yellowish. Incorporating day storage decreased tensile strength (2.73 ± 1.34 MPa) and elongation at break percentage for skin gelatin film meanwhile tensile strength for bone gelatin film (5.41 ± 1.33 MPa) higher than skin gelatin film but inversely for elongation at break. Increasing day storage will increased UV and visible light barrier properties and film solubility but decreased water vapor permeability of the skin gelatin film. Compare to bone gelatin film, skin gelatin film have better physical attribute in term of tensile strength and water vapour permeability.

ABSTRAK

Kesan masa penyimpanan ke atas sifat-sifat filem gelatin daripada kulit dan tulang ikan tilapia merah telah disiasat dalam kajian ini. Ikan telah disimpan untuk 0, 7 dan 14 hari dalam simpanan ais. Selepas penyimpanan, kulit dan tulang telah diperolehi untuk pengekstrakan gelatin. Hasil gelatin kulit meningkat apabila hari penyimpanan bertambah (hari 0; 7.3%, hari 7; 7,96% dan hari 14; 15,42%) manakala bagi hasil gelatin tulang menurun apabila hari penyimpanan bertambah (hari 0; 2.2%, hari 7; 2.8%, hari 14; 2,34%). Pada amnya, filem yang disediakan daripada ikan yang disimpan di dalam ais untuk tempoh yang lebih lama menjadi kurang telap cahaya, lebih gelap dan lebih kekuningan. Semakin lama ikan disimpan akan menurun kekuatan tegangan ($2,73 \pm 1,34$ MPa) dan peratusan pemanjangan untuk filem dari gelatin dari kulit. Sementara itu, kekuatan tegangan bagi filem gelatin dari tulang ($5,41 \pm 1,33$ MPa) lebih tinggi daripada filem gelatin dari kulit tetapi tidak berkadar langsung untuk peratusan pemanjangan. Peningkatan hari penyimpanan ikan akan meningkatkan sifat penghadang sinar UV dan cahaya nampak dan ketelantaran filem tetapi mengurangkan sifat ketelapan wap air dari filem gelatin kulit. Berbanding filem gelatin dari tulang, filem gelatin kulit mempunyai sifat-sifat fizikal yang lebih baik dari segi kekuatan ketegangan dan ketelapan wap air.