

EXTENDING THE SHELF LIFE OF MINIMALLY PROCESSED MUSKMELON
(*Cucumis melo*) USING HYDROCOLLOIDS AS EDIBLE COATINGS

By
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Research Report submitted in partial fulfillment of
the requirements for the degree of
Bachelor of Science in Agrotechnology (Post Harvest Technology)

DEPARTMENT OF AGROTECHNOLOGY
FACULTY OF AGROTECHNOLOGY AND FOOD SCIENCE
UNIVERSITI MALAYSIA TERENGGANU
2010

ACKNOWLEDGEMENT


Praised to Allah S.W.T for His blessing and willing, I was able to finish my final year project. I would like to dedicate special appreciation to my supervisor, Miss Roshita bt Ibrahim for her useful guidance, trust, support and invaluable advice that inspiring me throughout completion my final year project. Thanks and appreciation also goes to Miss Siti Nordahliawate bt Mohamed Sidique for being my co-supervisor that always support and give useful advise to complete by final year project.

Special thanks must be dedicated to other lecturers that always sharing their knowledge and information. Sincere thanks to all staffs in Agrotechnology department that helps me to realize my project. Beside that, I wish to express my sincere thanks from bottom of my heart to my best friends who supported, given their hands and sharing the invaluable information.

Last but not least, I sincerely appreciate my beloved parents (Ramli bin Pandak Nordin and Noor Ainun bt Mohd Ali) and my siblings who really give me advise, money, strength and non-stop moral support from the beginning until I completed my final project. Lastly, Thanks and appreciation goes to anybody that involves directly or indirectly in realizes my final year project, either in preparation of MP muskmelon, data collections or sensory evaluation. Thanks again.

ENDORSEMENT

The project report entitled '**Extending the shelf life of minimally processed muskmelon (*Cucumis melo*) using hydrocolloids as edible coating**', by Nurul Atiqah bt Ramli, Matric No UK15221 has been reviewed and corrections have been made according to the recommendations by examiners. This report is submitted to the Department of Agrotechnology in partial fulfillment of the requirement of the degree of B. Sc. Agrotechnology (Post Harvest Technology), Faculty of Agrotechnology and Food Science, Universiti Malaysia Terengganu.



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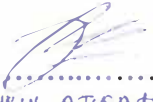
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DECLARATION

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

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ABSTRACT

The storage stability of minimally processed Muskmelon (*Cucumis melo* variety *Glamour*) treated with hydrocolloids as edible coatings were investigated. Muskmelons were selected base on uniformity of size, colour, shape and absences of damage and fungal infection. The muskmelons were sliced longitudinally into 12 wedges with 3 cm thick in the middle and treated with selected edible coatings of chitosan (1%), carrageenan (1%), pectin (2%) with calcium chloride (2%) and untreated fruits served as control. Physico-chemical changes, microbiological quality and sensory acceptability of minimally processed muskmelons were evaluated throughout 8 days of storage day at 5 ± 1 ° C. Edible coating treatments of chitosan (1%), carrageenan (1%) and pectin (2%) with calcium chloride (2%) reduced the percentage of weight loss of minimally processed muskmelon. Treatment of carrageenan (1%) showed the highest of colour changes where it affects the overall acceptability in the sensory evaluation as well as the increasing microbial counted that exceeded the limit for safe consumption. There were no significant different showed on total soluble solid of minimally processed muskmelon for each treatment of hydrocolloids and control throughout day 8. Texture analysis of minimally processed muskmelon treated with chitosan (1%) did not affect the texture acceptability in sensory evaluation. Microbial analysis showed that chitosan (1%) was found to be the best treatment in retaining the quality of minimally processed muskmelon and the level was safe for consumption until day 8. The results of this study demonstrated that chitosan (1%) effectively prolong the quality and extends the shelf life of minimally processed muskmelon followed by pectin (2%) with calcium chloride (2%), control and carrageenan (1%) stored at low temperature.

ABSTRAK

Kestabilan penyimpanan proses minima tembikai wangi (*Cucumis melo* varieti *Glamour*) yang disalut dengan larutan hidrokolloid sebagai penyalut yang boleh dimakan dijalankan. Buah tembikai wangi dipilih berdasarkan keseragaman saiz, warna, bentuk dan tiada kerosakan serta jangkitan kulat. Tembikai wangi dipotong memanjang menjadi 12 potongan baji dengan 3 cm tebal di tengah dan disalut dengan penyalut kitosan (1%), karagenan (1%), pektin (2%) bersama kalsium klorida (2%) serta buah tanpa penyalut dijadikan sebagai kawalan. Perubahan fiziko-kimia, kualiti mikrobiologi dan penilaian deria terhadap proses minima tembikai wangi dinilai dalam tempoh 8 hari pada suhu simpanan 5 ± 1 ° C. Proses minima tembikai wangi yang disalut dengan kitosan (1%), karagenan (1%) dan pektin (2%) bersama kalsium klorida (2%) mengurangkan peratus kehilangan berat. Salutan karagenan (1%) menunjukkan perubahan warna yang tertinggi di mana ia memberi kesan terhadap penerimaan keseluruhan dalam penilaian deria disamping peningkatan bilangan mikroorganisma yang melebihi tahap selamat untuk dimakan. Tiada perubahan ketara ditunjukkan terhadap jumlah keseluruhan pepejal terlarut dalam proses minima tembikai wangi antara setiap larutan hidrokolloid dan kawalan. Analisis tekstur salutan kitosan (1%) pada proses minima tembikai wangi tidak mempengaruhi penerimaan tekstur dalam penilaian deria. Analisis mikrob menunjukkan bahawa kitosan (1%) telah dikenalpasti sebagai salutan terbaik dalam mengekalkan kualiti proses minima tembikai wangi dan ditahap yang masih selamat untuk dimakan sehingga hari yang ke 8. Keputusan kajian ini menunjukkan bahawa kitosan (1%) secara efektifnya dapat mengekalkan kualiti dan memanjangkan jangka hayat proses minima tembikai wangi diikuti dengan salutan pektin (2%) bersama kalsium klorida (2%) control dan karagenan (1%) pada penyimpanan suhu rendah.