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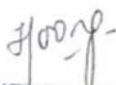
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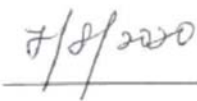
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**EFFECTS OF GLUCONO-DELTA-LACTONE (GDL) ON
PASTING, RHEOLOGICAL AND TEXTURAL PROPERTIES OF
WAXY RICE STARCH**

by

NAJIHAH BINTI MOHD RAFI

A dissertation submitted in partial fulfilment of the requirements for the degree of
Bachelor of Technology (B. Tech) in the field of Food Technology
School of Industrial Technology
Universiti Sains Malaysia

July 2020

DECLARATION BY AUTHOR

This dissertation is composed of my original work and contains no material previously published or written by another person except where due reference has been made in the text. The content of my dissertation is the result the work I have carried out since the commencement of my research project and does not include a substantial part of work that has been submitted to qualify for the award of any other degree or diploma in any university or other tertiary institution.



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Najihah Mohd Rafi

July 2020

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














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


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LIST OF SYMBOLS

Symbol	Definition
α	Alpha
$^{\circ}\text{C}$	Degree Celcius
$>$	Greater-than
$<$	Lesser-than
$\%$	Percent
\pm	Plus-minus
G'	Storage modulus
G''	Loss modulus

LIST OF ABBREVIATIONS

Abbreviation	Definition
GDL	Glucono-delta-lactone
RVA	Rapid Visco Analyzer
SEM	Scanning electron micrograph
w/v	Weight over volume

KESAN GLUKONO-DELTA-LAKTON (GDL) ATAS SIFAT-SIFAT PASTING, REOLOGI DAN TEKSTUR KANJI TEPUNG PULUT

ABSTRAK

Glukono-delta lakton (GDL) ialah sejenis asid lemah dan mudah untuk larut di dalam air. Penyelidikan yang fokus pada kesan penambahan GDL pada kanji sangat sukar didapati dan belum pernah ada kajian kesan GDL terhadap kanji dilaporkan dalam literatur. Oleh itu, penyelidikan ini dijalankan untuk mengkaji kesan GDL pada sifat-sifat *pasting*, reologi dan tekstur kanji tepung pulut. Sifat *pasting* dikaji dengan menggunakan “rapid visco analyser” (RVA). Penambahan GDL didapati meningkatkan kelikatan puncak dan kelikatan pecahan pes kanji tepung pulut. Apabila kepekatan larutan GDL meningkat, didapati bahawa kelikatan palung, kelikatan akhir dan kelikatan kemunduran menurun secara berperingkat. Seterusnya, analisis aliran keadaan mantap dan analisis berayun telah dijalankan untuk mengkaji sifat-sifat reologi kanji tepung pulut. Untuk analisis aliran keadaan mantap, apabila kadar ricih meningkat, kelikatan pes kanji tepung pulut dengan penambahan larutan GDL berkurangan dan juga menyebabkan pengurangan dalam nilai tiksotropik. Pes tepung pulut menunjukkan tingkah laku bukan Newtonian dan penipisan ricih. Untuk analisis berayun, nilai G' and G'' meningkat dengan meningkatnya frekuensi, dan G' adalah lebih tinggi nilai berbanding G'' untuk semua frekuensi selari dengan peningkatan kepekatan larutan GDL. Daripada kajian Back Extrusion adalah didapati pes tepung pulut yang disediakan dengan menggunakan larutan GDL 0.03% telah menunjukkan pengurangan yang progresif dari segi parameter keteguhan, ketekalan, kekompakan dan indek kelikatan sepanjang masa penyimpanan. Ini menunjukkan pes tepung pulut dengan penambahan GDL mempamerkan penurunan kecenderungan tahap retrogradasi.