PUSAT PENGAJIAN TEKNOLOGI INDUSTRI

UNIVERSITI SAINS MALAYSIA

BORANG PENYERAHAN DISERTAI MUTAKHIR

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Saya ingin mengesahkan bahawa saya berpuas hati dengan pembetulan /pindaan yang dilaksanakan oleh calon.

Sekian, terimakasih.

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Aug 25, 2020

(Tarikh)

STARCH BASED ANTIOXIDANT ACTIVE PACKAGING

By

SUKHUFUM MUKHTALIFAH

A dissertation submitted in partial fulfillment 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

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ACKNOWLEDGEMENT

I would like to begin by conveying my utmost gratitude to Dr Hayati Samsuddin, my final year project supervisor. Her never ending patience in dealing with my poor time management skills and late submissions. Not to mention all of our one to one consultation sessions which helped shape my understanding of the topic matter.

Furthermore, I would like to thank the School of Industrial Technology for allowing me to use the available facilities and equipment, without which it would not have been possible to conduct my research study.I would like to thank my parents, my course mate and my friends who support and encouragement during all this research. I would be lying if I said, I completed my final year project without a hitch. I have truly come to understand the meaning of the term trial and error through my research work.

SUKHUFUM MUKHTALIFAH

JULY 2020

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LIST OF ABBREVIATIONS

Abbreviation	Caption
µm	Micrometre
Cm	Centimetre
g	Gram
h	Hours
m	Metre
m^2	Metre square
min	minute
mm	Millimetre
mL	Millilitre
RH	Relative humidity
w/v	Weight per volume
v/v	Volume per volume
WVP	Water vapor permeability
mPa·S	Millipascal-second
nm	Nanometre
MC	Moisture content
RE	Rosemary extract

GTE	Green tea extract
BHT	Butylated hydroxytoluene
MPa	Mega pascal
TS	Tensile strength
EAB	Elongation break
YM	Young’s modulus

ABSTRAK

Pembungkusan aktif meningkatkan jangka hayat dan kawalan kualiti produk makanan. Malangnya, berbanding plastik biasa, produk berasaskan pati menunjukkan beberapa kelemahan terutamanya disebabkan oleh sifat pati yang sangat hidrofilik. Biasanya, ikatan hydrogen yang kuat menahan rantai kanji bersama, menyebabkan butiran kanji tidak larut dalam air sejuk. Sifat hidrofilik pati menyebabkan kestabilan air rendah dan kepekaan tinggi terhadap kelembapan, yang membatasi pengembangan bahan berasaskan kanji. Sifat filem yang dihasilkan dari pati menunjukkan ketegaran dan pengurangan kelenturan filem. Oleh itu, penambahan antioksidan ke berasaskan pati pembungkus dapat meningkatkan perlindungan keseluruhan terhadap produk. pembungkusan dari pati memberikan penghalang sederhana terhadap pengoksidaan, kelarutan, dan kebolehtelapan wap air. Penambahan antioksidan diperlukan untuk meningkatkan kualiti pembungkusan. Jumlah aditif yang tinggi dapat ditambahkan ke matriks, untuk meningkatkan ciri-ciri filem yang dihasilkan. Filem akhir yang diperoleh akan diperbaiki pada sifat mekanikal, dan ciri pencegah. Ulasan ini memberikan pemahaman asas mengenai pembungkusan aktif berasaskan pati antioksidan dan asas untuk penyelidikan masa depan.

ABSTRACT

Active packaging promotes shelf life extension and quality control of a food product. Unfortunately, compared to regular plastics, starch-based products exhibit some disadvantages mainly due to the highly hydrophilic nature of starch. Usually, strong hydrogen bonds hold the starch chain together, causing starch granules not to dissolve in cold water. This hydrophilic nature of starch causes low water stability and high sensitivity to moisture, which limits the development of starch-based materials. The properties of films produced from starch showed rigidity and reduced flexibility of the films. Thus, an addition of antioxidant to the packaging starch-based can improve the overall protection toward the products. Starch packaging provides moderate barrier to the oxidation, solubility, and water vapor permeability. The addition of antioxidant is needed to enhance the quality of the packaging. High number of additives can be added to the matrix, to improve the characteristics of the produced films. The final film obtained will be improved in the mechanical properties, and deterrent features.

This review provides a basic understanding of antioxidant starch based active packaging and a foundation for future research.