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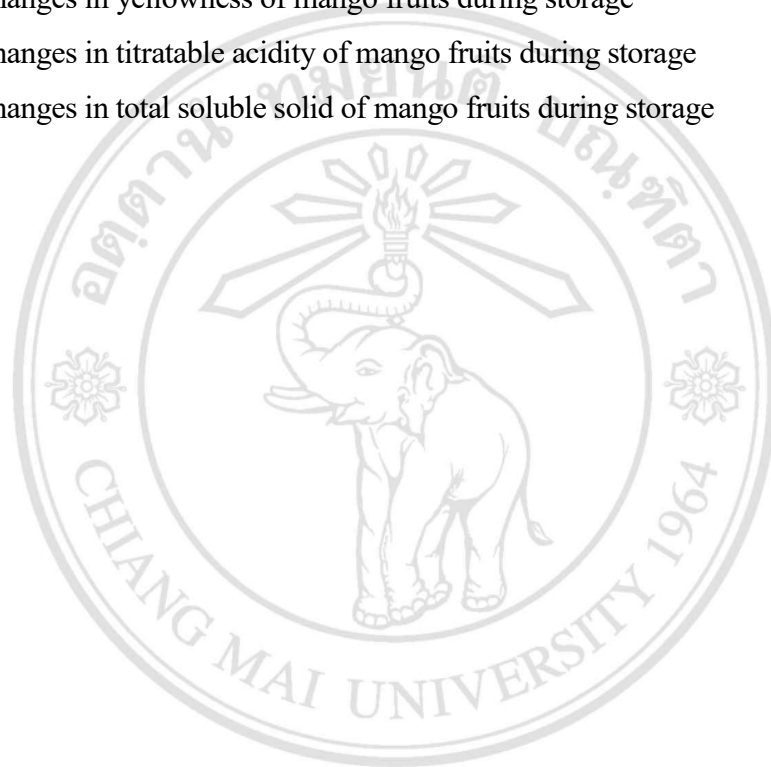
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LIST OF ABBREVIATIONS

g	Gram
μg	Microgram
mL	Milliliter
μL	Microliter
ppm	Part per million
mm	Millimeter
cm ²	Square centimeters
m ²	Square meters
mM	Millimolar
h	Hour
Pa	Pascal
MPa	Mega Pascal
kJ	Kilojoule
mol	Mole
s	Second
w	Weight
v	Volume
GRAS	Generally recognized as safe
UNC	Uncoated paper
VCS	Vanillin-chitosan coated paper
CMC	Carboxymethyl cellulose
VCMC	Vanillin-carboxymethyl cellulose coated paper
AC	Vanillin-chitosan coated paper incorporating with activated carbon
ZE	Vanillin-chitosan coated paper incorporating with zeolite
PDA	Potato dextrose agar
DSC	Differential scanning calorimetry
SEM	Scanning electron microscope
PIRG	Percent inhibition of radial growth

MIC	Minimum inhibitory concentration
WVP	Water vapor permeability
SID	Severity index of anthracnose disease
RH	Relative humidity
DS	Degree of substitution
TA	Titrateable acidity
TSS	Total soluble solid



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LIST OF SYMBOLS

\AA	Angstrom
α	Alpha
β	Beta
κ	Kappa
π	Pi
Σ	Sigma, Summation
R	Universal gas constant
$^{\circ}\text{C}$	Degree Celsius
T	Absolute temperature
T_g	Glass transition temperature
D	Diffusion coefficient
$t_{0.5}$	Square root of diffusion time
k	kinetic rate constant
E_a	Activation energy



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ข้อความแห่งการริเริ่ม

ผลไม้บ่มสุกที่มีผิวบางมักเกิดความเสียหายได้ง่ายในระหว่างการขนส่ง การห่อด้วยกระดาษหรือใช้โฟมตาข่ายสามารถช่วยปกป้องผลไม้จากรอยขีดข่วนหรือรอยฉ้ำได้ การพัฒนากระดาษห่อให้สามารถทำหน้าที่ได้มากกว่าการปกป้องผลไม้จากความเสียหายทางกายภาพคือ การทำให้กระดาษห่อสามารถยับยั้งการเจริญเติบโตของเชื้อสาเหตุโรคและชะลอสุกได้ การศึกษานี้จึงได้ทำการผลิตกระดาษห่อแบบแอคทีฟโดยทำการเคลือบสารยับยั้งเชื้อและชะลอสุกบนผิวหน้ากระดาษ กระดาษห่อแบบแอคทีฟผลิตขึ้นด้วยเทคโนโลยีที่ไม่ซับซ้อน สามารถทำได้โดยไม่ต้องอาศัยความชำนาญหรือการฝึกอบรมเกษตรกรและผู้ส่งออกสามารถนำไปประยุกต์ใช้เพื่อยืดอายุการเก็บรักษาผลไม้ได้ง่าย โดยไม่ต้องอาศัยเครื่องจักรใด ๆ อีกทั้งสารเคลือบที่ใช้ยังมีต้นทุนต่ำ ผลิตจากพอลิเมอร์ชีวฐานที่มีคุณสมบัติในการยับยั้งการเจริญของเชื้อรา ทำงานร่วมกับวานิลลินที่ได้รับการยอมรับว่าเป็นสารเคมีปลอดภัย (generally regarded as safe, GRAS) กระดาษห่อแบบแอคทีฟจึงเป็นอีกหนึ่งวิธีทางเลือกที่สามารถนำไปประยุกต์ใช้ในการควบคุมโรคในผลมะม่วงและผลไม้บ่มสุกชนิดอื่น ๆ ในระหว่างการขนส่ง นอกจากนี้ยังเป็นวิธีทางเลือกที่สอดคล้องกับนโยบายทางการตลาดของต่างประเทศ โดยเฉพาะอย่างยิ่งประเทศกลุ่มสหภาพยุโรป (European Union, EU) ที่ให้ความสำคัญกับการตลาดเพื่อสิ่งแวดล้อม

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STATEMENT OF ORIGINALITY

Fruit with thin peels are susceptible to damage during distribution. Wrapping paper or foam nets can be used to protect fruit from scratching and bruising. The additional functions of wrapping paper rather than providing physical protection in this study are to inhibit microbial growth and retard the ripening process of fruit by coating active substance on paper surface. Active wrapping paper in this study was developed using a simple technique that can be easily applied by a novice without any special skills or training. It can be used by gardeners and exporters in extending the storage life of mango fruit. Furthermore, the materials needed are economical and required no additional machinery. The coating material used were antifungal biopolymer incorporated with vanillin, which is generally regarded as safe (GRAS). This active wrapping paper can be applied as a novel method for controlling disease in mango or other climacteric fruits during exportation. Additionally, it is in line with international market policies, especially the European Union (EU) countries that focus on environmentally friendly packaging.

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