



# คู่มือการจัดทำวิทยานิพนธ์ ๒๕๕๔

สำนักงานประสานการจัดบัณฑิตศึกษา  
มหาวิทยาลัยราชภัฏพิบูลสงคราม

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  - 1.3 (Title Page)
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  - 1.5 (Approval Page)
  - 1.6 (Abstract in Thai)
  - 1.7 (Abstract in English)
  - 1.8 (Acknowledgement)
  - 1.9 (Table of Contents)
  - 1.10 (List of Tables)<sup>1</sup>
  - 1.11 (List of Illustrations)<sup>1</sup>
2. **(Contents)<sup>2</sup>**
  - 2.1 (Introduction)
  - 2.2 (Literature Review)
  - 2.3 (Research Methodology)
  - 2.4 (Results)
  - 2.5 (Conclusion Discussion and Recommendations)

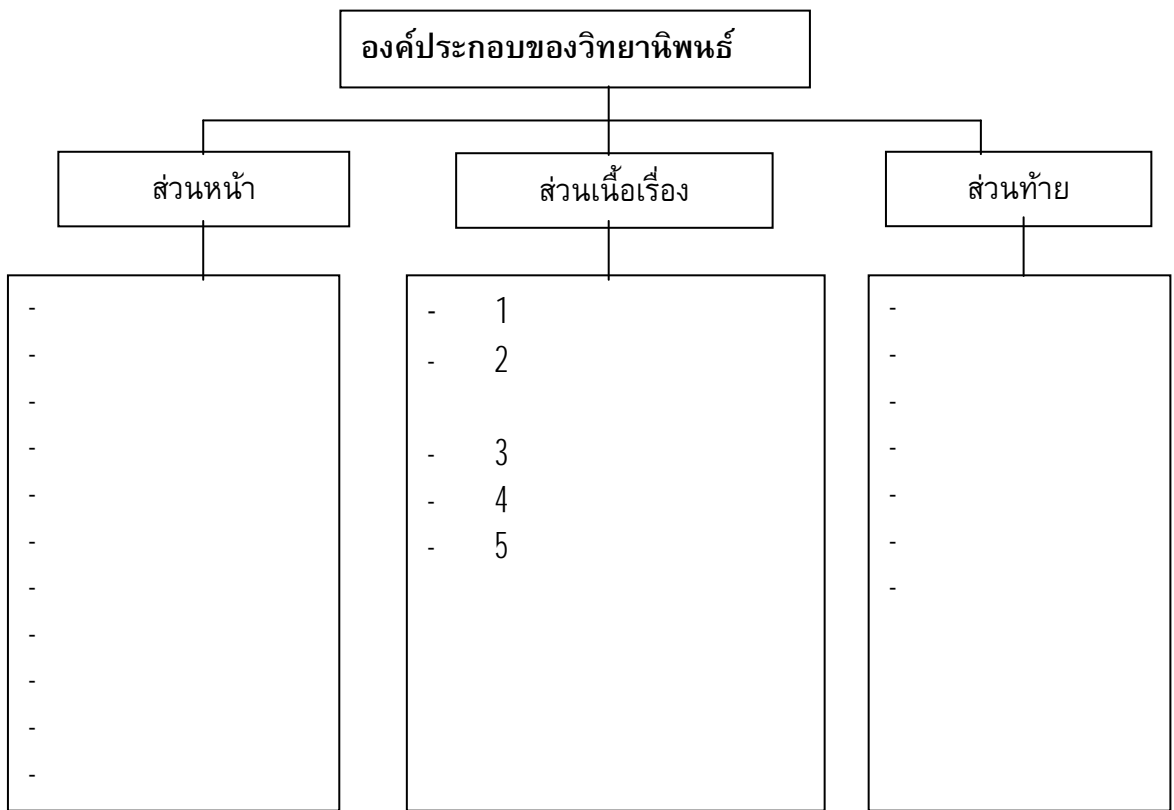
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<sup>1</sup> วิทยานิพนธ์บางเล่มอาจจะไม่มีองค์ประกอบนี้ก็ได้

<sup>2</sup> ส่วนเนื้อหาอาจจะมีแตกต่างกันตามศาสตร์และลักษณะการวิจัยที่เลือกใช้

- 3. (Auxiliary Material)
  - 3.1 (Half-title of Bibliography)
  - 3.2 (Bibliography)
  - 3.3 (Half-title of Appendix)<sup>1</sup>
  - 3.4 (Appendix)<sup>1</sup>
  - 3.5 (Curriculum Vitae)

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2.1 1 (Introduction)

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(Need for the Study)

2.1.1 (Research Objectives)

2.1.2 (Research Hypotheses) ( )

2.1.3 (Scope and Delimitation of Research)

2.1.4 (Definition of Keyterms)

2.1.5 (Basic Assumptions) ( )

2.1.6 (Limitation of the Study) ( )

2.1.7 (Benefit of Research)

**2.2 2 (Literature Review)**

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2.2.3 (Conceptual Framework)

**2.3 3 (Research Methodology)**

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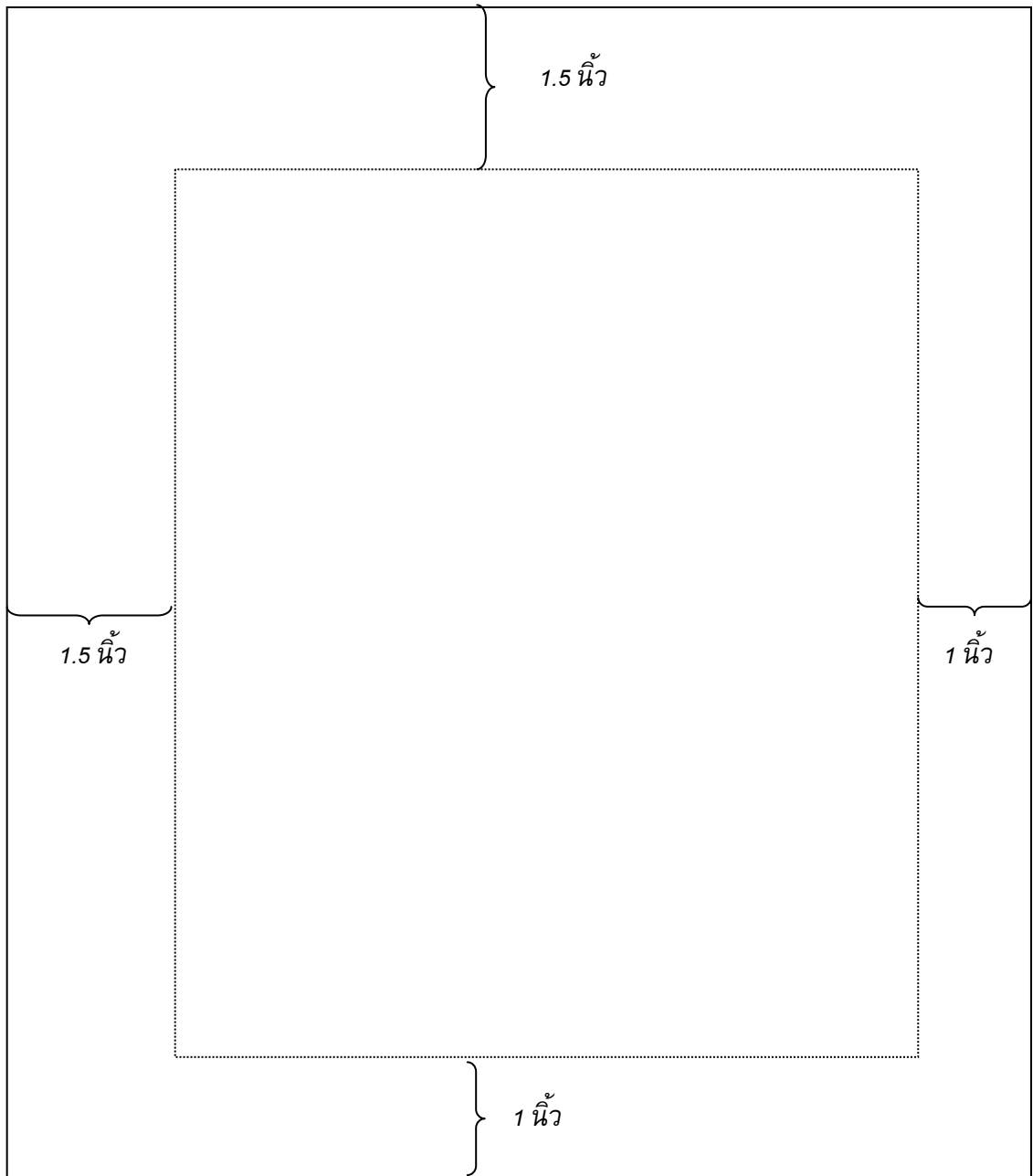
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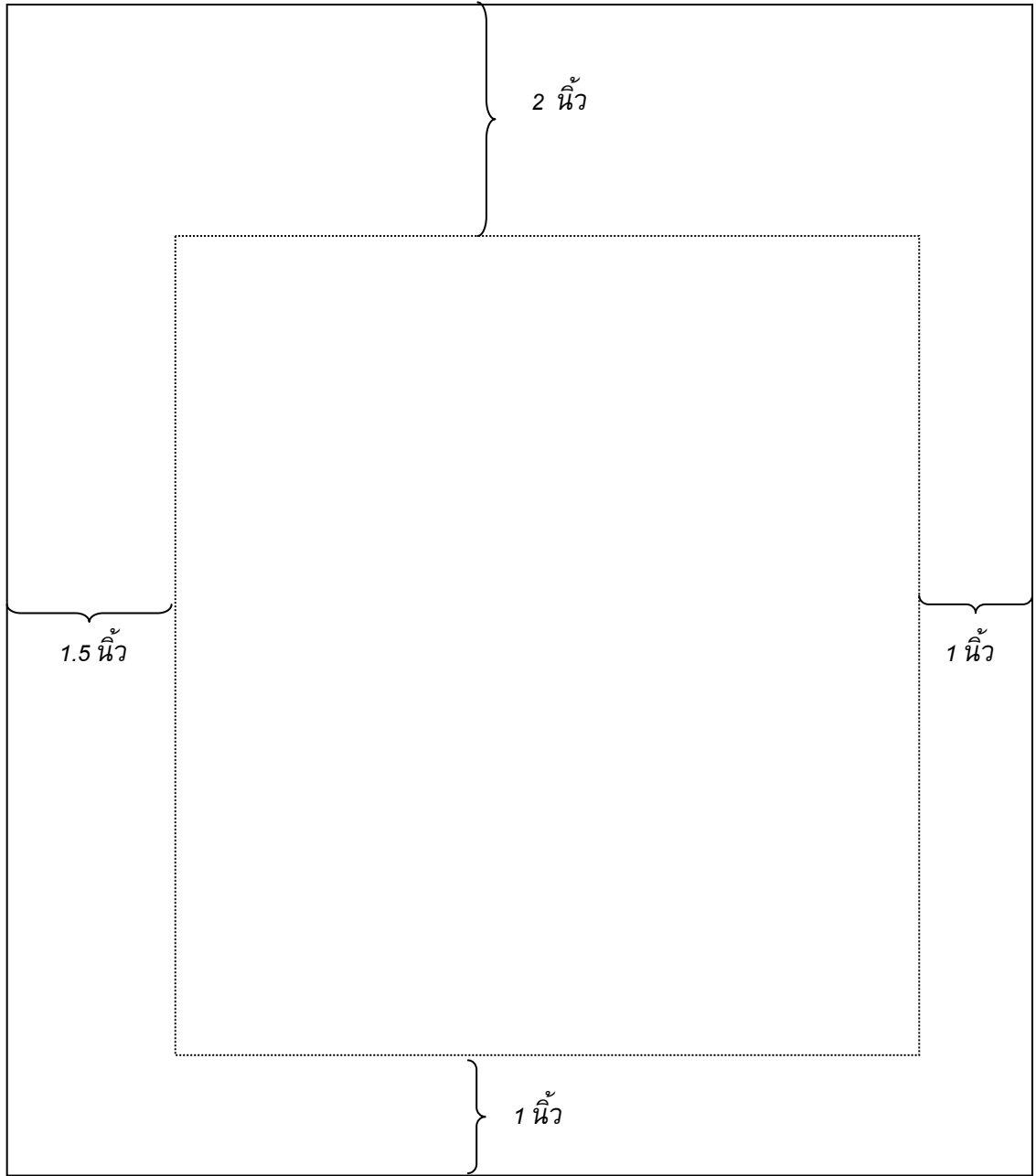
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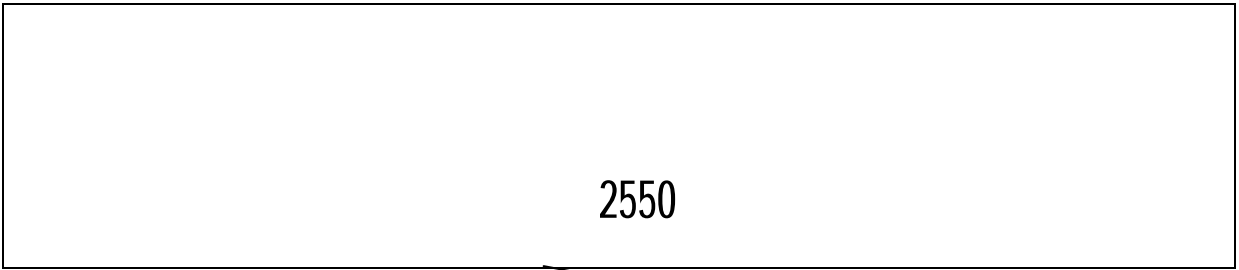
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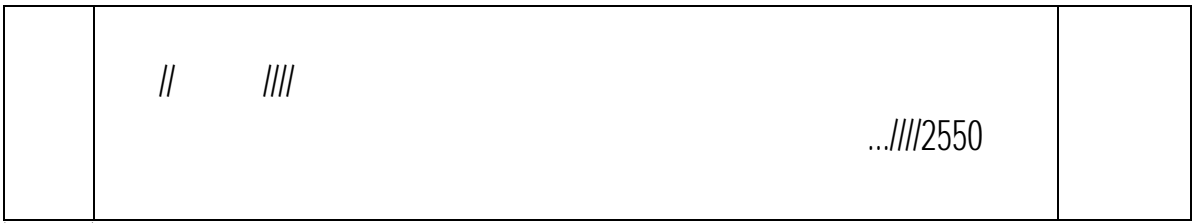
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Pim Taweenat

ตัวพิมพ์หน้าขนาด 20 พอยต์

A Thesis Submitted in Partial Fulfillment of the Requirements  
for the Degree of Master of Education  
Field in Education Administration  
Pibulsongkram Rajabhat University  
2007

ตัวพิมพ์หน้าขนาด 20 พอยต์

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		<u>Aspergillus flavus</u>	
		<u>Oryza sativa</u> L.	
		<u>Zea mays</u> L.	
		<u>Lycosa pseudoannulata</u> <u>Rosenber</u> <u>and</u> <u>Strand</u>	
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(Rader, 1999 : 272)

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(Blomberg, 1977a : 1 - 3, 1977b : 117)

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(Chan, 2003 : 7 ; Gates, 1989 : 101 - 103)

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2537 : 10 - 15)

(Gates, 1989 : 10) ; Chan, 2003 : 7)



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( , 2549 : 10 - 12 , 2530 : 171)  
(Rowley, 2006 : 13 citing Chan, 1997 : 7 - 8)

( , 2530 : 10 - 12 , 2549 : 171)  
(Chan, 1997 : 7 - 8 cited in Rowley, 2006 : 13)

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( , 2553 : 22)  
(Friesen, 2007, April 18, 15 - 16 )

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(Deci and Ryan, 1991 : 237 - 238)

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Bumpus, W., Morton, L.T., & Ansel, H.

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Baker, P. (Ed.)

Hankel, W., & Steinberg, J. (Eds.)

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New Jersey : Prentice Hall.

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ตัวพิมพ์หน้าขนาด 18 พอยต์

} เว้นระยะ 1 บรรทัดพิมพ์เดียว

	/ ( )	/ ( )
1.	( . )	<b>Doctor of Philosophy (Ph.D.)</b> Research and Development in Education
2.	( . )	<b>Master of Education</b> Education Administration (M.Ed.)
3.		Curriculum and Instruction (M.Ed.)
4.		Industrial Technology (M.Ed.)
5.		Education Research and Evaluation (M.Ed.)
6.		Special Education) (M.Ed.)
7.	( . )	<b>Master of Arts</b> Development Strategy (M.A.)
8.		Applied Management (M.A.)
9.		Applied Linguistics for Teaching English (M.A.)
10.	( . )	<b>Master of Science</b> Food Science and Technology (M.Sc.)
11.		Biological Sciences (M.Sc.)
12.		Biotechnology (M.Sc.)
13.		Science Education (M.Sc.)
14.		Environmental Technology and Management (M.Sc.)
15.		Chemistry (M.Sc.)
16.		<b>Master of Public Administration</b> Public Administration (M.P.A.)
17.	( . )	<b>Graduate Diploma</b> Education Administration (Grad.Dip.)
18.		Special Education (Grad.Dip.)
19.		Education Research and Evaluation (Grad.Dip.)



} เว้นระยะ 1 บรรทัดพิมพ์เดี่ยว

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ตัวพิมพ์หนาขนาด 18 พอยต์

2552 ← ปีการศึกษาที่ทำ

ตัวพิมพ์หนาขนาด 16 พอยต์

ตัวพิมพ์ปกติ 16 พอยต์

Title

A Proposal of Approach in Community Committee Participation  
Development in Sub Community Development, Wat Bot, Phitsanulok

ตัวพิมพ์หนา ขนาด 16 พอยต์

ตัวพิมพ์ปกติ ขนาด 16 พอยต์

} เว้นระยะ 1 บรรทัดพิมพ์เดียว

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ตัวพิมพ์หนาขนาด 20 พอยต์

ตัวพิมพ์หนาขนาด 20 พอยต์

2553  
ตัวพิมพ์หนาขนาด 20 พอยต์

( )  
Using Rice Bran to Substitute Wheat Flour for the Production  
of Ready-to-use High Nutrition Bread Flour

ตัวพิมพ์หนาขนาด 20 พอยต์

Songwoot Thi-on

ตัวพิมพ์หนาขนาด 20 พอยต์

A Thesis Submitted in Partial Fulfillment of the Requirements  
for the Degree of Master of Science  
Field in Food Science and Technology  
Pibulsongkram Rajabhat University

2010

ตัวพิมพ์หนาขนาด 20 พอยต์

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ตัวพิมพ์หนาขนาด 20 พอยต์

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} เว้นระยะ 1 บรรทัดพิมพ์เดียว



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0.04 / 7.77 14.60 6.67 8.15 52.55 14.82 4.37 4.37

0 10 20 30 40 7 B-1 5

20

(p>0.05)

(p>0.05)  
 (τ<sub>o</sub>) 64.64  
 74.66

(Thermal properties)  
 Peak Temperature (τ<sub>p</sub>) 69.58  
 Enthalpy (ΔH) -19.65 /

Onset Temperature  
 Conclusion Temperature (τ<sub>c</sub>)

1.74 3.11 2.13 70.96 1.85

0.88 0.03 /

9.31 12.99

8

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	(	)
<b>Title</b>	Using Rice Bran as Wheat Flour Substitution in Ready-to-use High Nutrition Bread Flours	
<b>Author</b>	Mr. Songwoot Thi-on	
<b>Advisors</b>	Dr. <u>Piyawan Supavititpatana</u> Dr. Utaiwan Chatthong	

### Abstract

The aims of this research were to study the formula and shelf-life of ready-to-use high nutrition bread flours. Chemical composition of rice bran powder was determined. Moisture, protein, fiber, ash, carbohydrate, fat, free fatty acid, oryzanol and tocopherol content were 7.77%, 14.60%, 6.67%, 8.15%, 52.55%, 14.82%, 4.37% 4.37 mg/g and 0.04 mg/g, respectively. The qualities of seven kinds of commercial sandwich breads, B-1 to B-7, in Phitsanulok province were determined. B-1 was found to be suitable as the standard sandwich bread. Rice bran powder was used to substitute wheat flour at 5 different levels which were 0, 10, 20, 30 and 40 % (w/w). As the substitution level increased, the oryzanol content, density of bread cell, hardness and chewiness increased whereas cohesiveness and elasticity decreased. In addition, sensory scores for all characteristics of the substituted breads decreased as the proportion of rice bran powder increased. The highest level of rice bran powder for substitution was 20% as indicated by sensory evaluation. At this level, there was no significant difference ( $p>0.05$ ) of the hardness and chewiness between the substituted samples and the control sample. The chemical composition and physical properties of the substituted samples and commercial sandwich breads were compared. The results showed that fiber, fat and oryzanol contents of the substituted samples were higher than those from the commercial samples. However, chewiness and springiness of both samples were not significantly different ( $p>0.05$ ). Thermal properties of ready-to-use mixed flours as indicated by onset temperature ( $\tau_o$ ), peak temperature ( $\tau_p$ ), conclusion temperature ( $\tau_c$ ) and enthalpy ( $\Delta H$ ) were 64.64°C, 69.58°C, 74.66°C and -19.65J/g, respectively. The moisture, protein, fiber, fat, ash, carbohydrate, free fatty acid, oryzanol and tocopherol contents of ready-to-use mixed flours were 9.31%, 12.99%, 1.74%, 3.11%, 2.13%, 70.96%, 1.85%, 0.88 mg/g and 0.03 mg/g, respectively. The shelf-life at room temperature of ready-to-use mixed flours, kept in aluminum-foil bag and sealed under normal atmospheric conditions, was 4 weeks. The shelf-life increased to not less than 8 weeks if sealed under vacuum conditions.

Degree of Master of Science  
Field in Food Science and Technology  
Academic Year 2010

Student's Signature.....  
Advisor's Signature.....  
Co- Advisor's Signature.....

} เว้นระยะ 1 บรรทัดพิมพ์เดียว

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ตัวพิมพ์หนาขนาด 18 พอยต์

} เว้นระยะ 1 บรรทัดพิมพ์เดียว

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	(Prepared mixes flour).....	8
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3	.....	12
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5	.....	46
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	.....	75
	.....	78
	.....	81
	.....	83
	.....	88



## (ตัวอย่างสารบัญตาราง)

1		.....	6
2		.....	15
3		.....	18
4		.....	20
5		.....	21
6		.....	26
7		.....	32
8		.....	34
9	L a b	(R-3) (B-1).....	36
10		(DSC).....	37
11		.....	38
12	L a b	.....	40
13	Water activity ( $a_w$ )	.....	41
14		.....	44
15		L a b .....	84
16		$a_w$ .....	85
17		.....	85

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1	$\alpha$ -Tocopherol.....	4
2	$\gamma$ -Oryzanol.....	4
3	Texture Profile Analysis	
4	(TPA).....	23
5	(	
6	Ink Print).....	24
7	5 0 10 20 30 40 .....	27
8	Texture Profile Analysis (TPA).....	28
9	5 0 10 20 30 40 (	
10	Ink Print).....	30
11	(R-3)	
12	(B-1).....	35
13	DSC Thermogram .....	37
14	10 50 100	
15	/ .....	79
16	5 10 20	
17	50 / .....	80
18	.....	82
19	.....	82

} วัณระยะ 1 บรรทัดพิมพ์เดียว

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	39	24.07
	119	73.46
	4	2.47
	162	100

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	14	7.29
	178	92.71
	<b>192</b>	<b>100.00</b>
	48	25.00
	144	75.00
	<b>192</b>	<b>100.00</b>
	157	81.77
	35	18.23
	<b>192</b>	<b>100.00</b>

2 ( )

10	36	18.75
11 - 20	48	25.00
21 - 30	45	23.44
31 - 40	63	32.81
	<b>192</b>	<b>100.00</b>

2			178
92.71		14	7.29
	144	75	48
25.00			157
			18.23
	31 - 40	63	32.81
		11 - 20	48
		21 - 30	45
		10	36
			23.44
			25
			18.75
			81.77

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} เว้นระยะ 1 บรรทัดพิมพ์เดียว

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เว้นระยะ 1 บรรทัดพิมพ์เดี่ยว

ตัวพิมพ์หนาขนาด 18 พอยต์

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. . 2553		( )	

ตัวพิมพ์หนา ขนาด 16 พอยต์

} เว้นระยะ 1 บรรทัดพิมพ์เดียว



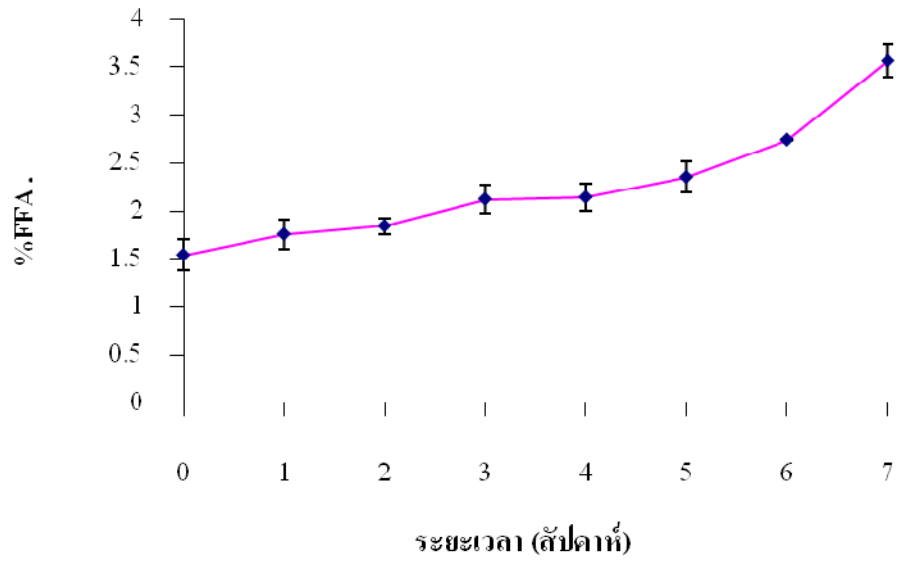


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เว้นระยะ 1 บรรทัดพิมพ์เดียว



} เว้นระยะ 1 บรรทัดพิมพ์เดียว



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2554

เจ้าของ

สำนักงานประสานการจัดบัณฑิตศึกษา  
มหาวิทยาลัยราชภัฏพิบูลสงคราม

จัดทำโดย

ผู้ช่วยศาสตราจารย์ ดร.พิทักษ์ อยู่มี  
ผู้ช่วยศาสตราจารย์ ดร.เตือนใจ เกียวศรี  
อาจารย์ ดร.สมหมาย อ่ำดอนกลอย  
ผู้ช่วยศาสตราจารย์น้อย คันชังทอง  
ผู้ช่วยศาสตราจารย์ ดร.สุขแก้ว คำสอน  
อาจารย์ ดร.ปิยวรรณ ศุภวิทิตพัฒนา  
อาจารย์ ดร.อุษณีย์ เส็งพานิช  
อาจารย์ ดร.กฤษฎากาญจน์ โตพิทักษ์  
นางสาวธรรมสาคร รุ่งนิมิตร

แบบปก

นางวนิดา ตรีพรหม  
นางสาวอรุณฉาย คำวัง

เผยแพร่

ตุลาคม 2554