



**PARTIAL SUBSTITUTION OF WHEAT FLOUR WITH LOCUST
(*Locusta migratoria*) POWDER IN WHITE SALTED NOODLE
INCORPORATED WITH SPI AND MTG WITH INCOMPLETE
INFORMATION: AN EXPERIMENTAL STUDY.**

by

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DECLARATION BY AUTHOR

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TABLE OF CONTENTS

ACKNOWLEDGMENTS	iii
TABLE OF CONTENTS	iv
LIST OF TABLES	v
LIST OF FIGURES	vi
LIST OF ABBREVIATIONS AND SYMBOLS	vii
ABSTRAK	viii
ABSTRACT	ix
CHAPTER 1 INTRODUCTION	1
1.1 Background of research	1
1.2 Problem Statement	2
1.3 Objectives of study	4
CHAPTER 2 LITERITURE REVIEW	5
2.1 Entomophagy	5
2.1.1 History of human consumption of insect	5
2.2 Edible insect as food resource	6
2.2.2 Nutrient composition of edible insect	6
2.2.2a Protein content	8
2.2.2b Fibre content	9
2.3 Production of insect-based product.	10
2.3.1 Insect-based food product	10
2.4 Limitation of insect usage for food product	12
2.4.1 Food safety issues	13
2.4.2 Consumer acceptance	14
CHAPTER 3 MATERIALS AND METHODS	16
3.1 Materials	16
3.2 Noodle preparation	16
3.2 Optimum cooking time	18
CHAPTER 4 RESULT AND DISCUSSION	19
4.1 Noodle formulation description	19
4.2 Optimum cooking time	21
CHAPTER 5 CONCLUSIONS AND RECOMENDATIONS	23
5.1 Conclusion	23
5.2 Recommendation	23
REFERENCES	24

LIST OF TABLES

Table Caption	Page
2.1 Protein and fiber content in edible insects	7
2.2 Protein content from common protein source	8
2.3 Food product made from insect	10
2.4 Allergens substance found in insects	13
3.1 Formulation of the wheat noodle	17
4.1 Optimum cooking time for wheat noodle	21

LIST OF FIGURES

Figure Caption	Page
4.1 White salted noodle formulation L10/SPI/MTG after cooking	21

LIST OF ABBREVIATIONS AND SYMBOLS

Abbreviation	Caption
g	Gram
LMW	Low molecular weight
HMW	High molecular weight
MTG	Microbial Transglutaminase.
SPI	Soy Protein Isolate.
WN-L0	Controlled wheat noodle.
WN-L5	Wheat noodle with 5% of locust powder.
WN-L5A	Wheat noodle with 5% of locust powder using 45g of water.
WN-L5B	Wheat noodle with 5% of locust powder using 48g of water.
WN-L5C	Wheat noodle with 5% of locust powder using 50g of water.
WN-L5/MTG	Wheat noodle with 5% of locust powder and microbial transglutaminase.
WN-L5/SPI	Wheat noodle with 5% of locust powder and soy protein isolate.
WN-L10/SPI	Wheat noodle with 10% of locust powder and soy protein isolate.
WN-L10/SPI10	Wheat noodle with 10% of locust powder and 10g of soy protein isolate.
WN-L10/SPI/MTG	Wheat noodle with 10% of locust powder, soy protein isolate and microbial transglutaminase.
°C	Degree Celsius
±	Plus minus

**PENGGANTIAN SEBAHAGIAN TEPUNG GANDUM DENGAN SERBUK
BELALANG JUTA (*Locusta migratoria*) DALAM MI MASIN PUTIH YANG
DICAMPUR DENGAN PROTIN KACANG SOYA TERASING DAN
TRANSGLUTAMINASE MIKROB YANG MAKLUMATNYA TIDAK
LENGKAP: KAJIAN UJI KAJI.**

ABSTRAK

Peningkatan populasi mengancam keselamatan makanan kerana sumber protin dari tumbuhan dan haiwan tidak mencukupi. Belalang juta dibenarkan dalam Islam dan mengandungi kandungan protin yang agak tinggi. SPI dan MTG mungkin dapat membantu mengukuhkan struktur mi. Tujuan penyelidikan adalah untuk mengkaji kemungkinan formulasi mi putih masin yang diperbuat daripada serbuk belalang dengan menilai kualiti memasak mi masin putih apabila 5 dan 10% berat tepung serbuk belalang mengganti sebahagian daripada tepung gandum dan menyiasat kesan SPI dan MTG sebagai pengikat makanan. Pembuat mi menguli bahan selama 3 minit dan membiarkannya berehat selama 8 minit. Kemudian, pembuat mi mengeluarkan adunan secara automatik dan mi dilapisi dengan lapisan tepung nipis untuk mengelakkannya melekat. Mi kemudian dikukus selama 30 minit, dimasak dalam air suling mendidih. Semua formulasi tidak berjaya dibuat kecuali L0 dan L5 / SPI. Semakin bertambahnya jumlah peratusan serbuk belalang dalam mi masin putih, struktur jaringan dalam mi gandum semakin lemah apabila jumlah peratusan gluten menurun apabila diperhatikan secara visual dan masa yang diperlukan untuk memasak mi juga meningkat secara optimum. Perumusan selanjutnya diperlukan dengan menggunakan serbuk belalang yang dibuat dari bahagian badan sahaja dan memastikan pH mi sesuai untuk pengaktifan MTG.

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ABSTRACT

The increasing population is threatening the food security as the protein source from plants and animals is insufficient. Migratory locust is permissible in Islam and contain quite high protein content. SPI and MTG may help to strengthen the noodle structure. The aim of the research is to survey the possible formulation for white salted noodle made from locust powder by evaluating the cooking quality of white salted noodle as locust powder is partially substituted locust powder (5 and 10% by flour weight) and investigate the effect of SPI and MTG as food binder. The noodle maker kneaded the ingredients for 3 minutes and let it rest for 8 minutes. Then, the noodle maker extruded the dough automatically and noodles were coated with a thin layer of flour to prevent sticking together. The noodle was then steamed for 30 minutes, cooked in boiling distilled water. All formulations were not form successfully except for L0 and L5/SPI. As the amount of locust powder percentage in white salted noodle increasing, network structure in the wheat noodle was weaken as the amount of gluten percentage decreases when observed visually and the time necessary to cook the noodle optimally increases. Further formulation is needed using locust powder made from body part only and ensure the noodle's pH suitable for MTG activation.