

**EVALUATION OF COCONUT FLOUR INCORPORATED  
MUFFIN MIX: SHELF-LIFE EVALUATION WITH RESPECT TO  
CHEMICAL, SENSORY AND MICROBIAL CHANGES**



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## ABSTRACT

Coconut flour is a gluten-free flour that reduces celiac disease due to its higher dietary fiber content, being free of fatty acids, and its low carbohydrate content. Muffins, which are ready to eat, are made using a dry blend of ingredients called instant muffin mix (IMM). This study aims to evaluate the shelf-life stability of coconut flour incorporated instant muffin mix by analyzing chemical (peroxide and FFA), microbial (TPC, Yeast and Mold count), and moisture changes over more than one month in two different packaging materials (kraft paper pouch and aluminum pouch), while also assessing the sensory acceptability and statistically determining the significant differences using Minitab 22. The muffin mix was formulated with 40% coconut flour and 60% wheat flour based on a previously optimized formulation. A sensory evaluation by 30 untrained panelists was conducted using a 5-point hedonic scale to determine the good quality of coconut flour incorporation. Proximate composition and analysis were conducted to find the moisture, ash, protein, fat, and crude fiber. Free fatty acid, peroxide, and moisture content were also tested. Kraft paper pouch and aluminum pouch were the two packaging types. DDCF incorporated muffin mix has a higher moisture content, crude protein, crude fiber, fat content, and ash content than the control muffin mix. Proximate analysis and shelf life were analyzed using one-way ANOVA in version 22 of Minitab software. This study compares the FFA values in two packaging materials over time, where the kraft paper pouch had a lower FFA level of 0.051mg NaOH/g oil, and the aluminum pouch showed an increased FFA level of 0.068mg NaOH/g oil by the end of 28 days. Moisture level in the aluminum pouch, which is 5.9514%, is higher than the Kraft paper pouch, which is 5.8030%. Total Plate Count in aluminum packaging, which was  $6.01 \times 10^2$  CFU/g, consistently exhibits larger microbial loads than the kraft paper pouch,  $4.70 \times 10^2$  CFU/g by the end of 42 days. The yeast and mold growth in the aluminum pouch, which was  $5.88 \times 10^2$  CFU/g, is higher than in the kraft paper pouch,  $5.40 \times 10^2$  CFU/g, by the end of 42 days. Peroxide value was not detectable. Future research is encouraged for long-term storage studies.

**Keywords:** Coconut flour, Instant muffin mix, shelf life, packaging material

# TABLE OF CONTENTS

DECLARATION .....	iv
ACKNOWLEDGMENT .....	vi
ABSTRACT .....	vii
LIST OF FIGURES .....	x
LIST OF TABLES .....	xi
LIST OF ABBREVIATIONS .....	xii
CHAPTER 1 .....	1
INTRODUCTION .....	1
Background: .....	1
Statement of the problem: .....	3
Overall Objective of the Study: .....	4
Specific Objectives: .....	4
CHAPTER 2 .....	5
REVIEW OF LITERATURE .....	5
2.1 Coconut: Origin, health benefits, nutrition, and importance .....	5
2.2 Value-added Coconut Products .....	5
2.3 Virgin Coconut Oil .....	7
2.4 Coconut Solid Residue .....	7
2.5 Defatted Coconut Flour .....	8
2.6 Dietary Fiber .....	8
2.7 Muffins .....	9
2.8 Ingredients Used: .....	9
2.9 Sensory Evaluation .....	12
2.10 Hedonic Test .....	12
2.11 Proximate Analysis .....	13
2.12 Packaging Materials .....	13
2.13 Shelf Life .....	14
2.14 Total Plate Count .....	15
2.15 Total Yeast and Mold count .....	15
CHAPTER 3 .....	16
MATERIALS AND METHODOLOGIES .....	16

3.1 Location and Time Duration.....	16
3.2 Experimental Design .....	16
3.3 Materials and Equipment.....	16
3.4 Methodology.....	19
CHAPTER 4.....	35
RESULTS AND DISCUSSION .....	35
4.1 Sensory Scores.....	35
4.2 Proximate Composition of DDCF Incorporated Muffin Mix.....	37
4.3 Shelf-Life Analysis.....	40
CONCLUSION .....	46
REFERENCES.....	47
APPENDIX.....	56