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Chick'n Fiber: Development of Breading Mix using Banana (Musa sapientum var. lacatan) Peel as a Good Source of Dietary Fiber

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Introduction

Background of the Study

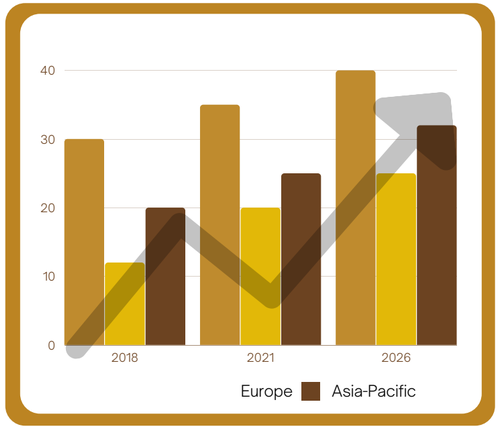
- The Philippines is one of the leading producers of bananas globally and there is a high consumption of bananas among all the regions in the country
- Nowadays, one-third of all food produced in the world ends up as waste leading to environmental consequences
- The fiber intake of Filipino working adults was only 7.97g, in contrast to the recommended nutrient intake of 20 to 25 grams/ day
- It is associated with lifestyle related diseases, such as cardiovascular diseases, diabetes, and hypertension

This study aims to develop a breading mix (BM), determine the most acceptable formulation of BM with BP, and evaluate its nutrient and microbial content.

Introduction

Background of the Study

High consumption of fast food items



Increased demand for breader segment

More animal sources of protein

Lacks dietary fiber content

Materials & Methods

Data Collection

PHASE 1

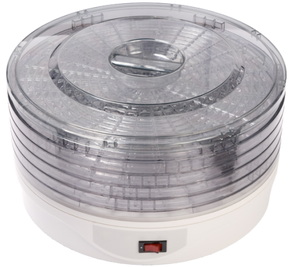
Processing of the Banana Peel

RIPE BANANA (STAGE 7) BANANA LACATAN

PEELS

CUT INTO SMALL PIECES

DIPPED THE PEELS INTO THE SOLUTION



DEHYDRATED FOR 5 TO 9 HOURS AT 70 C

GRINDED IN A COMMERICAL GRINDER

SIEVED INTO FINE POWDER

PARTIALLY DRIED BANANA PEEL

Materials & Methods

Data Collection

PHASE 2

Development of breading mix using different ratio of partially fine dried banana peel

PARTIALLY FINE DRIED BANANA PEEL (PFDBP)

+

ALL PURPOSE FLOUR (AFP)

+

OTHER INGREDIENTS (SPICES)

=

BM CONTROL (COMMERCIAL BREADING MIX)

(25% PFDBP SUBSITUTION WITH APF)

BM B (30% PFDBP SUBSITUTION WITH APF)

BM A (35% PFDBP SUBSITUTION WITH APF)

Materials & Methods

Data Collection

PHASE 3

Nutrient and Microbial Analysis

- Total Dietary Fiber
- (Standard Plate Count, and Yeast & Molds Count)

Actual Breading Mix Formulations

PHASE 3

Pre-testing of the descriptive characteristics: Pre-test sensory evaluation

**QDA METHOD*

- Sensory evaluation of the breading mix as applied on pan-fried chicken breast fillet by 11 trained food panelists in a sensorium
- Recipe Standardization

**Quantitative Descriptive Analysis*

PHASE 4

Fat analysis and final acceptability of the breading mix

HEDONIC METHOD

- Sensory Evaluation the breading mix as applied on pan-fried chicken breast fillet by 50 Untrained Food Panelists/Consumers in a Sensorium
- Fat analysis

(QDA)
11 trained food panelists
(Hedonic)
50 Consumers

Results

Table 1. Total Dietary Fiber and Percent RNI of Four Breading Mix Formulations per 25 g serving size

Food Composition	Control	BM A	BM B	BM C
Total Dietary Fiber (g/per 25g)	0	2.36	2.76	3.21
% RNI (%)*	0	9.4 - 11.8	11.0 - 13.8	12.8 - 16.1

Table 2. Microbiological Characteristics of Three Breading Mix Formulations

Microbiological Test	Maximum acceptable level of organisms	BM A	BM B	BM C
Yeasts and Molds Count	100 CFU/g	<10 CFU/g	<10 CFU/g	<10 CFU/g
Standard Plate Count	10,000 CFU/g	4,300 CFU/g	12,000 CFU/g	1,100 CFU/g

**For one sample tested*

Results

Table 3. Total Fat Percentage of Three Breading Mix Formulations applied on pan-fried chicken breast fillet

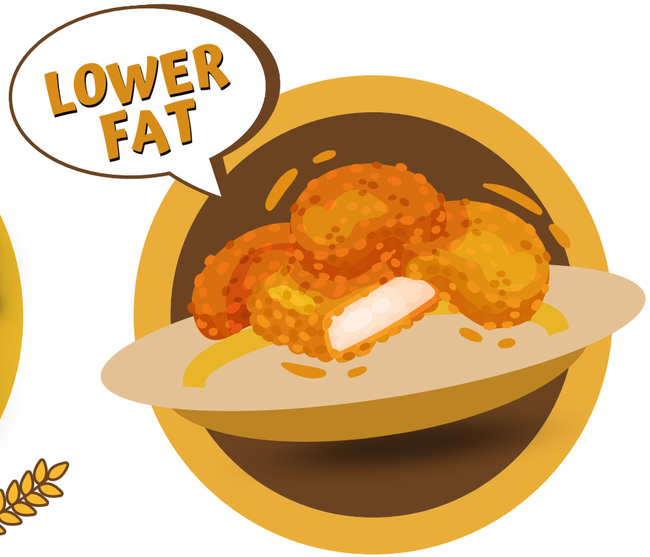
Food Composition	Control	BM A	BM C
Total Fat Percentage (%) (per 100g per sample)	11.35	6.06	10.1

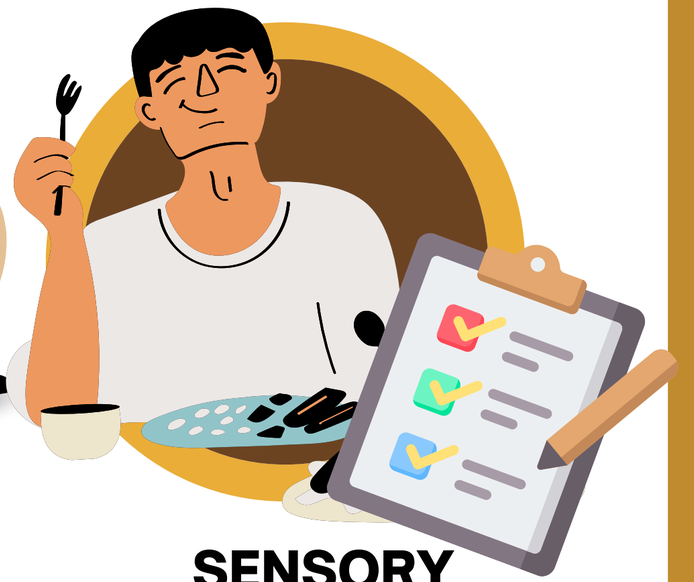
Results

Table 4. Mean Scores for Consumer's Sensory Evaluation of Breading Mix Formulations

Sensory Characteristics	Mean Scores		
	BM Control	BM A	BM C
Aroma	7.84	7.24	6.7
Flavor	7.56	6.92	6.76
Texture	7.66	6.94	7.30
Color	7.70	5.40	5.34
Appearance	7.88	5.72	5.64
Overall acceptability	7.74	6.48	6.10
Interpretation	Like very much	Like slightly	Like slightly

Conclusion





TOTAL DIETARY FIBER

BM A, BM B, and BM C yielded a significant amount of dietary fiber, thus resulting in a BM that is a good source of the DF.

FAT ANALYSIS

It is found that the coated chicken breast fillet with the BM with DF had a lower fat content as compared to BM Control.

MICROBIAL TESTING

Only BM B exceeded the acceptable values and this is mainly due to the moisture that is still present in the dehydrated BP.

SENSORY EVALUATION

All of the BM formulations are considered acceptable. BM A was the most preferred formulation with banana peel

Next Steps:

- Explore and utilize different dehydration methods
- Knowing the possible source of banana peel waste to be used in the study
- Explore the economic aspect of the product
- Testing the moisture content to have a better understanding of the water-holding capacity of banana peel applied in BM.
- Conduct further proximate analysis of the insoluble and soluble fiber content of the developed breading mix
- Consider obtaining the chemical analysis of all nutrients present in nutrition facts
- Inclusion of test for best packaging and shelf life stability of the product

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THANK YOU FOR YOUR INTEREST!

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