

**COMPARISON OF PROXIMATE COMPOSITION AND  
FUNCTIONAL PROPERTIES OF RESISTANT STARCH IN  
BLANCHED AND PREGELATINIZED FORMS OF COMMONLY  
AVAILABLE BANANA VARIETIES**



By

**W.M.H.K Weerakoon**



FTC177

Project Report  
Main Library, Eastern University, Sri Lanka

**Department of Biosystems Technology**

**Faculty of Technology**

**Eastern University, Sri Lanka**

**2024**

## ABSTRACT

In this study, blanched and pregelatinized of widely accessible banana types in Sri Lanka are investigated for their resistant starch's functional characteristics and approximate composition. The aim of the project is to provide useful information about the nutritional and functional variations resulting from blanching and pregelatinizing process. Kandula, Red, Sugar, Ambul, Parakum, Millawa suwadal and Cavendish were among the seven banana types that were selected for investigation.

The following parameters were measured using proximate analysis: pH, total soluble solids, total acidity, crude protein levels, and moisture and ash contents. The functional parameters that were evaluated were bulk density, solubility, foaming, emulsion, swelling, water and oil absorption capacities, and bulk density. The findings indicated that there were significant variations in the functional characteristics and proximate composition of several banana types and processing techniques.

The results demonstrate the possibility for incorporating banana flour of various types and processing techniques as food ingredients in processed foods, hence advancing the creation of functional food products. The purpose of this research is to benefit the manufacturing company and its stockholders financially while also advancing our understanding of the nutritional and functional qualities of products derived from bananas.

# TABLE OF CONTENT

DECLARATION .....	i
DEDICATION .....	ii
ACKNOWLEDGEMENT .....	iii
ABSTRACT .....	iv
TABLE OF CONTENT .....	v
LIST OF FIGURES .....	viii
LIST OF TABLES .....	ix
CHAPTER 01 .....	1
1.0 INTRODUCTION .....	1
1.1 Background .....	1
1.2 Objectives .....	4
1.2.1. Overall objectives .....	4
1.2.2. Specific Objectives .....	4
CHAPTER 02 .....	5
2.0 LITERATURE REVIEW .....	5
2.1 Study plant.....	5
2.1.1. Banana ( <i>Musa sp.</i> ) .....	5
2.1.2. History of the banana .....	6
2.1.3. Recommended varieties of banana .....	8
2.1.4. Nutritional value of banana.....	10
2.2 Resistant starch of banana.....	11
2.3 Functional properties .....	12
2.4 Proximate Analysis.....	15

2.5 Uses of banana.....	16
2.6 Medicinal Properties of Banana .....	17
2.6.1. Beneficial Effects.....	17
2.6.2. Adverse Effects.....	18
CHAPTER 3 .....	19
3.0 MATERIALS AND METHODOLOGY .....	19
3.1 Location.....	19
3.2 Banana flour preparation .....	19
3.2.1. Banana flour preparation by Blanching .....	19
3.2.2. Banana flour preparation by pre gelatinizing.....	20
3.3 Determination of proximate analysis .....	21
3.3.1. Determination of Moisture Content .....	21
3.3.2. Determination of Total Ash Content.....	22
3.3.3. Determination of pH .....	23
3.3.4. Determination of Total soluble solids (TSS) .....	23
3.3.5. Determination of Total Acidity (TA).....	23
3.3.6. Determination of crude protein.....	23
3.4 Determination of Functional Properties .....	24
3.4.1. Water Absorption Capacity determination .....	24
3.4.2. Oil Absorption Capacity determination .....	25
3.4.3. Foaming Capacity determination (FC) .....	26
3.4.5. Emulsion Capacity determination (EC).....	26
3.4.6. Swelling Capacity and Solubility determination .....	27
3.4.6. Bulk Density determination .....	27
3.5 Statistical Analysis .....	28

CHAPTER 4 .....	29
4.0 RESULTS AND DISCUSSION .....	29
4.1 Effect of Treatment on proximate composition and functional properties of flour of different banana varieties .....	29
4.1.1. Effects of treatment on proximate composition of flour of different banana varieties .....	30
4.1.2. Effects of treatment on functional properties of flour of different banana varieties.....	34
4.2 Effect of varieties on proximate composition and functional properties of flour of different banana varieties .....	38
4.2.1. Effects of varieties on proximate composition of flour of different banana varieties by Blanching.....	38
4.2.2. Effects of varieties on proximate composition of flour of different banana varieties by Pregelatinizing.....	42
4.2.3. Effects of varieties on functional properties of flour of different banana varieties by Blanching.....	45
4.2.4. Effects of varieties on functional properties of flour of different banana varieties by Pregelatinizing.....	48
CHAPTER 5 .....	51
5.0 CONCLUSION AND RECOMMENDATIONS .....	51
5.1 Recommendations for Further Studies .....	52
REFERENCES .....	54