MANGO SEED KERNEL FLOUR

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ABSTRACT This study aimed to select the most appropriate maturity of mango seeds for processing flour. Data were gathered using the Hedonic Scale for Sensory evaluation utilizing 15 evaluators through physical observation and laboratory tests. The following were the finding revealed in the study: Flour can be taken from any ripeness of indian mango seeds from slightly ripe, ripe to overripe when the appropriate methodology is applied. All the flour produced were strongly like for aroma, slightly dislike for taste, moderately like for texture and color, the slightly ripe and overripe was strongly like and moderately like the ripe. The microorganism contamination was not controlled the fact that these were procedures performed outside of FIC due to the lack of necessary equipment.

Keywords: Mango Seed, Flour, sensory evaluation

INTRODUCTION

Background of the Study

Mango is a very common tropical fruit usually found in Western Visayas, especially here in Guimaras. Mangoes belong to the genus Mangifera in the flowering plant family Anacardiaceae. It is cultivated and grown vastly in many tropical regions and is widely distributed in the world. Ripe mangoes are processed into canned products, frozen mango products, dehydrated products, and ready-to-serve beverages. After consumption or industrial processing of the fruits, substancial amounts of mango seeds are discarded as waste (Kittiphoom, 2012). They account for 35%–55% of the fruit, depending on the variety. Therefore, the utilization of mango by-products, especially mango seed, maybe an economical way to reduce the problem of waste disposal from mango production. Disposal of their materials usually represents a problem that is further aggravated by legal restrictions. Thus, new aspects concerning the use of their wastes as by-products for further exploitation on the production of food additives or supplements with high nutritional value have gained increasing interest. It is well known that by-products represent an important source of dietary fiber, sugars, minerals, organic acid, and phenolics with a wide range of action including anti-tumoral, antiviral, antibacterial, cardioprotective and anti-mutagenic activities.

Objective of the Study

The study was conducted to select the most appropriate maturity of mango seed for processing.

MATERIALS AND METHODS

Materials
Mango Seeds
Stainless Steel Knife
Cabinet Dryer
Air Tight Container
Chopping Board
Food Processor
Sealer

Procedures
1. Mango seeds were washed and dried in cabinet dyer 60˚c for 6 hours.
2. Kernels were separated from stone manually using stainless steel knife and dried in a cabinet dryer at 50˚c for 4 hours and stored in our tight container.
3. During processing, stored kernels were soaked 6-7 hours in the vwater, sliced into pieces, blanched (1-2 mins) dried 60˚c for 5 hours and ground into powder in food processor, sieved and stored in our tight container.
4. Repeat procedures 1-3 for the different ripeness of mango seed (slightly ripe, ripe, and overripe).

RESULTS AND DISCUSSIONS

Table 1 shows the mass of Indian Mango seeds used and the amount of flour produced for every trial. Results show that for the first trial for the maturity of seeds the process ended only at cabinet drying due to undesirable result for the reason that the seeds used have stayed for two weeks before they were processed for drying. For trial two, the amount of sliced and blanched seeds was minimal for grinding due to more wastage during the peeling and slicing. In trial three, for the slightly ripe, out of 5 kgs seeds, 300 grams flour was produced; for ripe 166 grams and overripe 133 grams.

Table 1. Mass of Indian Mango Seeds and Flour Produced

Maturity of Indian Mango Seeds	Trial 1		Trial 2		Trial 3	
	Mango Seeds	Flour Produced	Mango Seeds	Flour Produced	Mango Seeds	Flour Produced
Slightly ripe	5 kgs.	After cabinet drying, the	5 kgs.	There were more wastage	5 kgs.	300 grams
Ripe	5 kgs.	seeds became black, so the	5 kgs.	of seeds due to wrong procedures	5 kgs.	166 grams
Overripe	5 kgs.	process did not proceed to further steps	5 kgs.	in peeling and cutting of seeds	5 kgs.	133 grams

Table 2 shows that for the final production of flour to be the sample for laboratory test, improvement was done starting from peeling and slicing in order to produce the desired quantity for laboratory test, the 5 kgs slightly ripe produced 300 grams; the ripe 295 grams and the overripe 290 grams.

Table 2. Mass of Indian Mango Seeds and Flour Produced for Final Production of Sample for Laboratory Tests

Maturity of Indian Mango Seeds	Trial 1	
	Mango Seeds	Flour Produced
Slightly ripe	5 kgs.	300 grams
Ripe	5 kgs.	295 grams
Overripe	5 kgs.	290 grams

Table 3 shows that the flour produced from slightly ripe and overripe is colored white and fine as to texture while that from ripe is light brown in color and fine in texture.

Table 3. Physical Characteristics of Flour Produced

Maturity of Indian Mango Seeds	Trial 1	
	Color of Flour	Texture of Flour
Slightly ripe	White	300 grams
Ripe	Light brown	295 grams
Overripe	White	290 grams

Data in Table 4 shows that the sensory evaluation results for color, the flour produced from slightly ripe and overripe was strongly like while that from ripe was moderately like; as to texture, all the flour produced from different maturity were moderately like; for aroma, all the flour produced were strongly like; and for taste, slightly

Table 4. Results of Sensory Evaluation of Indian Mango Seed Kernel Flour

Maturity of Indian Mango Seeds	Indian Mango Seed Kernel Flour			
	Color	Texture	Aroma	Taste
Slightly ripe	like strongly	like moderately	like strongly	slightly dislike
Ripe	like moderately	like moderately	like strongly	slightly dislike
Overripe	like strongly	like moderately	like strongly	slightly dislike

Table 5 shows micro laboratory test results, where the aerobic plate count is 48,000 cfu/g sample and Escherichia coli count is <1.8 MPN/g samples. The molds and yeast count are 55,000 cfu/g sample. The indian mango seeds were ground at the private grinder due to the unavailability of such equipment at the Food Innovation Center. Thus, the possibility of contamination was not controlled.

Table 5. Micro Laboratory Test Results

Sample Description	Parameter	Result
Indian Mango Seed Kernel Flour 200 grams	Aerobic Plate Count Escherichia Coli Count Molds and Yeast Count	48 000 cfu/g sample < 1.8 MPN/g sample 55 000 cfu/g sample

CONCLUSION

Flour can be taken from any ripeness of indian mango seeds from slightly ripe, ripe to overripe when the appropriate methodology is followed. Microorganism contamination of the product can be controlled if all the necessary equipment are available at the FIC.

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