DEVELOPMENT OF NONI FRUIT (Morinda citrifolia) READY-TO-SERVE DRINK AND ITS NUTRITIONAL PARAMETERS

8 NOV

BY

N.S. HETTIARACHCHI



FACULTY OF TECHNOLOGY EASTERN UNIVERSITY, CHENKALADY, SRI LANKA

2023

ABSTRACT

Noni (Morinda citrifolia linn) fruits are edible but they don't have nice taste and flavor but it has not come to general popular consumption like coffee and other fruit in same family due to the myth in the community as it a toxic fruit. Therefore, this is one of the very underutilized fruits in Sri Lanka. Therefore, the proposed study aimed to investigate the utilization of Noni fruits to develop Ready -To-Serve (RTS) drinks and evaluate its sensory, analysis of its Nutritional parameters. Four formulations of Noni Drink were prepared by changing the percentages of juice level (10%, 13%, 14%, and 15%) the control sample was formulated without incorporating Additives (sugar, citric acid, pectin and potassium sorbate). All the formulations were subjected to physicochemical analysis (pH value, moisture, ash, Titratable acidity, Brix%, and ascorbic acid), microbial analysis (Standard plate count (SPC) and Coliform), and sensory evaluation. The shelf-life of the product was studied during 30 days of the storage period by evaluating the changes in moisture content, pH value, Ascorbic acid and microbial qualities. Moreover, all the formulations exhibited acceptable limits on microbial quality parameters throughout the storage period. According to the sensory evaluation, the sample which was formulated by incorporating 15% noni juice, 12% sugar, 66% water, 4% ginger flavor and 2% mint flavor was found to be the best treatment (p < 0.05) with the highest overall acceptability of $7.5 \pm 0.11a$. According to the physicochemical analysis, the Noni drink sample contained 66.77°±0.05% moisture, 0.268±0.42% Ash, 17.00±0.00a % Brix, 3.30 ±0.00a pH, 12.64±0.06 mg/100ml ascorbic acid and 0.0032±0. 0.00d Titratable acidity.

Keywords: Noni; Morinda; Ready-To-Serve; RTS drink. Underutilized fruits;

TABLE OF CONTENT

ABSTRACT
ACKNOWLEDGEMENT
TABLE OF CONTENT
CHAPTER 01
INTRODUCTION
1.1 Problem Identification and Justification10
1.2 Objectives
CHAPTER 02
LITERATURE REVIEW
2.1 Introduction of Noni Beverages 11
2.2 Main ingredient of Noni Beverages
2.2.1.2 Common name for Noni
2.2.1.3 Origin and Distribution
2.2.1.4 Propagation and Reproduction15
2.2.1.5 General Botanical Description
2.2.1.6 Properties of Noni Fruit Juice
2.2.1.7 Health Benefits of Noni Juice
CHAPTER 03
MATERIALS AND METHODOLOGY
3.1 Preparation of Noni RTS
3.2 Preparation Noni juice
3.3. Physicochemical analysis of Drink
3.3.2. Moisture Determination:
3.3.3. Determination of Ash content (AC)
3.3.4. Determination of Brix
3.3.5 Determination of Titratable Acidity (TA)
3.3.6 Determination of Ascorbic acid
3.4 Microbiological Analysis
3.5. Sensory Evaluation of Noni Juice
3.6 Statical Analysis

CHAPTER 04
RESULTS AND DISCUSSION
4.1 Physico-Chemical Qualities of Noni Drink
4.1.2 Moisture percent in Noni Drink
4.1.3 Brix value in Noni Drink
4.1.4 pH value of Noni Drinks
4.1.5 Titratable Acidity percentage in Noni Drink
4.1.6 Ascorbic Acid in Noni Drink
4.1.7 Ash percentage in Noni Drink
4.2 Sensory Evaluation of Noni Juice
4.3 Microbial analysis of Noni Drink
CHAPTURE 5
CONCLUSION
CHAPTER 06
REFERENCES
Appendix - 1

LIST OF TABLES

Table 2.1: Evolution of fruit skin color and firmness in the course of ripening 16
Table 2.2: Some Traditional uses of Noni 17
Table 2.3: Nutritional analysis of 100% Hawaiian noni juice, conducted in May 200519
Table 3.1: Different formulations of Noni Drink 24
Table 3.2: Samples with respective codes
Table 4.1: Physicochemical analysis of Noni Drink 35
Table 4.2: Sensory evaluation of Noni Drink
Table 4.3: Average data on microbiological analysis of different parameters of
control and experiment of Noni juice
Table 4.4: Coliform test results 43

LIST OF FIGURES

Figure 2.1: Fresh ripen Noni fruit
Figure 2.2: Noni plant
Figure 2.3:Noni Flower
Figure 2.4: Noni Leaves
Figure 2.5: Noni Fruit
Figure 2.6: Cut Noni fruit
Figure 2.7: Twigs
Figure 2.8: Noni Seeds
Figure 2.9: Maturity stages of Noni Fruit
Figure 3.1: Control and experiment samples
Figure 3.2: Testing pH
Figure 3.3: Testing Brix
Figure 3.4: Sensory evaluation
Figure 4.1: Changes in moisture content of Noni Drink over the storage period
Figure 4.2: Changes in Brix value of Noni drink over the storage period
Figure 4.3: Changes of pH of Noni Drink over the storage period
Figure 4.4: Changes in Titratable acidity of Noni drink over the storage period
Figure 4.5: Changes in Ascorbic content of Noni drink over the storage period
Figure 4.6: Sensory Attributes of Noni Drink
Figure 4.7: Standard plate count of control and experimental samples of Noni Drink 43