

PREPARATION AND STORAGE OF READY-TO-SERVE (RTS)
BEVERAGE FROM PALMYRAH (*Borassus flabellifer* L.)
FRUIT PULP

290



BY

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ABSTRACT

Palmyrah (*Borassus flabellifer* L.) is one of the under-utilized fruit having nutritional and medicinal values. Only a few value added products of palmyrah fruit are available in the market of Sri Lanka. There is a need for the development of more value added products using this fruit. A Ready-to-Serve (RTS) fruit beverage is becoming popular among Sri Lankans which can be produced with simple and low cost technology. Therefore, this study was carried out to develop a RTS beverage using palmyrah fruit pulp.

Five recipes of palmyrah RTS beverage (RTS beverage with 8, 10, 12, 14 and 16% of pulp concentrations) were prepared with sugar, citric acid, distilled water and 70 ppm of potassium metabisulphite (KMS), considering the findings of preliminary studies and Sri Lanka standards (SLS 729) for RTS fruit beverages. The RTS beverages were assessed for physico-chemical qualities, organoleptic characters and microbial tests to evaluate the suitability of these beverages for consumption and for long shelf life.

The physico-chemical (titrable acidity, ascorbic acid, pH, total soluble solids (TSS) and total sugar) and organoleptic (colour, aroma, taste, consistency, absence of off-flavour and overall acceptability) qualities and total plate count were analyzed after formulation and during storage. The titrable acidity, ascorbic acid and total sugar of the freshly made RTS beverages increased, while the pH decreased and TSS remained same as 15°Brix with the increase in the concentration of palmyrah pulp from 8 to 16%. Seven-point hedonic scale ranking method was used to evaluate the organoleptic characters. According to Tukey's test, the mean scores for all the assessed sensory characters varied significantly ($p < 0.05$) in the freshly made RTS beverages. No total plate count was observed in inoculated samples of freshly made RTS beverages.

Based on the quality characters, the most preferred palmyrah RTS beverages (RTS beverage with 10, 12 and 14% of pulp concentrations) were selected and subjected to storage studies in two different conditions of ambient temperature (30°C) and refrigeration temperature (5°C). Storage study was carried out two weeks interval throughout the experimental period.

The findings of the storage study revealed that, the declining trend was observed in ascorbic acid, pH, TSS and total sugar with storage period and an increasing trend was observed in titrable acidity with storage period for all the treatments. Compared to the samples stored at 30°C, the samples stored at 5°C showed the better performance. Also the results of physico-chemical analysis revealed that, there were significant differences ($p < 0.05$) between the treatments and the period of storage. The sensory analysis also showed that there were significant ($p < 0.05$) differences for the organoleptic characters between the treatments. The highest overall acceptability was observed in palmyrah RTS beverage with 12% of pulp concentration which was stored at 5°C. Compared to the treatments which were stored at 5°C, the bacterial counts were slightly greater in the treatments which were stored at 30°C at the end of storage period.

Based on the results of physico-chemical characteristics and sensory attributes and microbial test, the RTS beverage with 12% of pulp concentration stored at 5°C was selected as the best treatment. The samples stored at 5°C had better qualities compared to that of 30°C.

TABLE OF CONTENTS

	Page No
ABSTRACT	I
ACKNOWLEDGEMENT	III
TABLE OF CONTENTS	IV
LIST OF TABLES	XII
LIST OF FIGURES	XIII
LIST OF PLATES	XIV
CHAPTER 01. INTRODUCTION	01
CHAPTER 02. LITERATURE REVIEW	06
2.1 Palmyrah	06
2.1.1 Taxonomy	06
2.1.2 Origin and Distribution	06
2.1.3 Description	08
2.1.4 Uses	08
2.1.4.1 Non-Edible Uses	08
2.1.4.2 Edible Uses	09
2.1.5 Varieties	09
2.1.6 Cultivation	10
2.1.6.1 World	10
2.1.6.2 Sri Lanka	10
2.2 Fruiting, Harvesting and Yield	11
2.2.1 Fruiting	11
2.2.2 Fruit Development	11

2.2.3 Fruit Ripening	12
2.2.4 Harvesting	13
2.2.5 Yield	13
2.3 Palmyrah Fruit Pulp	13
2.3.1 Proximate Composition of Palmyrah Fruit Pulp	15
2.3.2 Pulp Extraction and Preservation of Pulp	15
2.3.2.1 Extraction	15
2.3.2.2 Preservation of Fruit Pulp	16
2.4 Bitter Compounds in Palmyrah Fruit	18
2.4.1 Flabelliferins	18
2.4.2 Separation Techniques	19
2.4.3 Structural Studies on Flabelliferins	20
2.4.3.1 The Aglycone	20
2.4.3.2 Flabelliferin I (F-I)	20
2.4.3.3 Flabelliferin II (F-II)	20
2.4.3.4 Flabelliferin B (F _B)	21
2.4.3.5 Flabelliferin C (F _C)	22
2.4.3.6 Flabelliferin D (F _D)	22
2.4.3.7 Flabelliferin N (F _N)	22
2.4.3.8 Flabelliferin E (F _E)	23
2.4.3.9 Flabelliferin F (F _F)	23
2.4.4 Debittering	23
2.5 Palmyrah Fruit Pulp Products and Recipes	24
2.5.1 Palmyrah Pulp Leather ('Pinattu' in Tamil)	24
2.5.2 Oil Cake ('Panangkai Panniyaram' in Tamil)	25

2.5.3 Pulp Cake ('Adai' in Tamil)	25
2.5.4 Fruit Drinks	26
2.5.5 Steamed Pulp Cake ('Khanon Taan' in Thai)	26
2.5.6 Palmyrah Jam	26
2.5.7 Palmyrah Cordial	27
2.5.8 Palm Chocolate	27
2.5.9 Palmyrah Mellows	28
2.5.10 Palm Bread	28
2.6 Ready-to-Serve (RTS) Fruit Beverages	29
2.6.1 Basic Ingredients of RTS Beverages	29
2.6.1.1 Fruit	29
2.6.1.2 Sweetening Ingredients	29
2.6.1.3 Portable Water	29
2.6.2 Optional Ingredients of RTS Beverages	30
2.6.2.1 Preservatives	30
2.6.2.2 Acidulants	30
2.6.2.3 Others	30
2.6.3 Requirements to be Fulfilled in RTS Beverages	30
2.6.3.1 Fruit Ingredient	30
2.6.3.2 Appearance	30
2.6.3.3 Flavour and Odour	31
2.6.3.4 Packaging Material	31
2.6.3.5 Other Ingredients	31
2.7 Preparation of RTS Fruit Beverages	31
2.7.1 Selection of Fruits	31

2.7.2 Cleaning of Fruits	32
2.7.3 Preparation of Pulp	32
2.7.4 Preparation of Sugar Solution	32
2.7.5 Mixing	32
2.7.6 Heating	32
2.7.7 Hot Filling	32
2.7.8 Capping	33
2.8 Clarification of Fruit Juices	33
2.8.1 Use of Chemicals	33
2.8.1.1 Gelatin	34
2.8.1.1.1 Fining Reaction	34
2.9 Microbiology of Fruit Drinks	34
2.9.1 Microbiology Limits of the RTS Fruit Beverages	36
2.10 Sensory Evaluation	36
2.10.1 Tests Used to Achieve the Objective	36
2.10.1.1 Hedonic Rating Test	37
2.10.2 Qualities Assessed by Sensory Tests	37
2.10.2.1 Appearance	38
2.10.2.1.1 Colour	38
2.10.2.2 Flavour	38
2.10.2.2.1 Odour	39
2.10.2.2.2 Taste	39
2.10.2.2.3 Mouth Feel	39
2.10.2.2.3.1 Texture	39
2.10.2.2.3.2 Consistency	39

2.10.2.3 Overall Acceptability	40
2.10.3 Benefits of Using Sensory Evaluation	40
2.10.4 Problem Associated with Sensory Evaluation	40
2.10.5 Rules of Sensory Evaluation	41
CHAPTER 03. MATERIALS AND METHODS	42
3.1 Materials	42
3.1.1 Materials Used for the Study	42
3.1.2 Material Collection	42
3.2 Methods	42
3.2.1 Preparation of Raw Materials	42
3.2.2 Sterilization of Glass Bottles	43
3.2.3 Sterilization of Other Equipments and Materials	43
3.3 Preliminary Studies	43
3.3.1 Development of Palmyrah RTS Beverage Recipes	44
3.4 Preparation of RTS Fruit Beverage	45
3.4.1 Preparation of Gelatin Solution	45
3.4.2 Clarification of Palmyrah Pulp	45
3.4.3 Preparation Method of Palmyrah RTS Beverage	45
3.5 Physico-Chemical Analysis of Palmyrah RTS Beverage	47
3.5.1 Determination of Titrable Acidity	48
3.5.1.1 Principle	48
3.5.1.2 Materials	48
3.5.1.3 Procedure	48
3.5.1.4 Calculation	48
3.5.2 Determination of pH	49

3.5.2.1 Materials	49
3.5.2.2 Procedure	49
3.5.3 Determination of Ascorbic Acid	49
3.5.3.1 Principle	49
3.5.3.2 Materials	50
3.5.3.3 Procedure	50
3.5.3.4 Calculation	50
3.5.4 Determination of Total Soluble Solids	51
3.5.4.1 Materials	51
3.5.4.2 Procedure	51
3.5.5 Determination of Total Sugar (Lane-Eynon method)	51
3.5.5.1 Principle	51
3.5.5.2 Materials	51
3.5.5.3 Procedure	51
3.5.5.4 Calculation	52
3.6 Storage Studies	52
3.7 Microbiological Test	53
3.7.1 Preparation of Nutrient Agar	53
3.7.2 Preparation of Dilution Series of the RTS Beverage	
Samples	53
3.7.3 Inoculation	53
3.7.4 Identification of Microbes	54
3.8 Sensory Evaluation	54
3.8.1 Materials for the Sensory Evaluation	54
3.8.2 Coding the Samples	54

3.8.3 Serving of Samples	55
3.9 Statistical Analysis	55
CHAPTER 04. RESULTS AND DISCUSSION	56
4.1 Preparation of Palmyrah Ready-to-Serve (RTS) Fruit Beverage	56
4.2 Preliminary Studies	56
4.3 Quality Characteristics of Freshly Made Palmyrah RTS Beverages	57
4.3.1 Physico-Chemical Qualities of Freshly Made Palmyrah RTS Beverages	57
4.3.1.1 Titrable Acidity	57
4.3.1.2 Ascorbic Acid	58
4.3.1.3 pH	59
4.3.1.4 Total Soluble Solids (TSS)	59
4.3.1.5 Total Sugar	60
4.3.2 Sensory Qualities of Freshly Made Palmyrah RTS Beverages	61
4.3.2.1 Colour	61
4.3.2.2 Aroma	63
4.3.2.3 Taste	63
4.3.2.4 Consistency	63
4.3.2.5 Absence of Off-flavour	64
4.3.2.6 Overall Acceptability	64
4.4 Changes in Quality Characteristics of Palmyrah RTS Beverages Stored at Different Temperatures	64
4.4.1 Physico-Chemical Qualities of Palmyrah RTS Beverages during Storage	64

4.4.1.1	Titration Acidity	65
4.4.1.2	Ascorbic Acid	66
4.4.1.3	pH	68
4.4.1.4	Total Soluble Solids (TSS)	70
4.4.1.5	Total Sugar	70
4.4.2	Sensory Qualities of Palmyrah RTS Beverages during Storage	72
4.4.2.1	Colour	74
4.4.2.2	Aroma	74
4.4.2.3	Taste	74
4.4.2.4	Consistency	74
4.4.2.5	Absence of Off-flavour	75
4.4.2.6	Overall Acceptability	75
4.5	Microbiological Tests for RTS Beverages	76
4.5.1	Microbial Test for Freshly Made RTS Beverage	76
4.5.2	Microbial Test for RTS Beverages Stored at 5°C and 30°C after One Month	76
4.5.3	Microbial Test for RTS Beverages Stored at 5°C and 30°C after Two Months	77
4.5.4	Microbial Test for RTS Beverages Stored at 5°C and 30°C after Three Months	78
CHAPTER 05. CONCLUSIONS		79
SUGGESTIONS FOR FUTURE RESEARCH		81
REFERENCES		82
APPENDIX		