

FOOD AND NUTRITION RESEARCH INSTITUTE

DEPARTMENT OF SCIENCE AND TECHNOLOGY



## Ready-to-Drink Vitamin-Rich Green Mango Juice

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#### RATIONALE

• The demand for RTD vitamin-rich green mango juice in local and export markets as well as the prevalence of micronutrient malnutrition problem in the country prompted the FNRI to conduct the study.

This study supports the Food Fortification Law of 2000 on Republic Act 8976 mandating the fortification of processed foods.

This study will help the beverage industry who are in need of this technology and at the same time provide job opportunities to the SME's.

This study will enable seasonal and locallyavailable raw materials to be used and marketed in order to generate added value product.



## **OBJECTIVE:**

#### **FNRI** General:

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To develop a technology and determine shelf-life of a ready-todrink vitamin-rich green mango juice



#### **OBJECTIVE:** Specifically:

#### FNRI

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- 1. To fortify the juice with 100% and 33% of the Recommended and Nutrient Intake (RENI) for vitamin C and A per 200 ml serving size respectively, for adult Filipino per serving.
- 2. To standardize the processing parameters for the production of a ready-to-drink vitamin-rich green mango juice;



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## **OBJECTIVE:**

#### **Specifically:**

- 3.To determine the physico-chemical, microbiological and sensory properties of a ready-to-drink vitamin-rich green mango juice during development and storage; and
- 4.To determine the effect of packaging materials using glass bottles PET and PE Foil pouches, on the quality of a ready-to-drink vitamin-rich green mango juice.

## **METHODOLOGY**



- 1. Raw material specs
- 2. Processing conditions
- 3. Packaging material

- 1. Established processing parameters
- 2. Adjustment in the formula

3. Product specs

**1.Shelf-life data** 

2. Best before date

#### Flow diagram of the study



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**Green Mango** 



**Sample preparation** 



**Puree preparation** 



RTD Vitamin-Rich Green Mango Juice



Packing



Processing

Flow diagram of RTD vitamin-rich green mango juice production

#### Other ingredients





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Raw Material





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#### Figure 2. Packaging Materials



FNR

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#### **Parameters-Equipment used**

Parameters	Equipment / Method
Color	Minolta Chromameter
рН	pH meter
TA	Titrimetric method
TSS	Atago Refractometer
Vitamin A	HPLC method
Vitamin C	Titrimetric method
Sensory Evaluation	Hedonic & QDA
Microbiological analvsis	BAM





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# **RESULTS**





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### **RESULTS**



## Results of vitamin A analysis of RTD vitamin-rich green mango



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## RESULTS



#### **Results of vitamin C analysis of RTD vitamin-rich** green mango



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## **RESULTS**



Months

Results of sensory evaluation of RTD vitamin-rich green mango juice using 7pt. Hedonic Rating



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#### COLOR EVALUATION (7pt. HEDONIC) of RTD VITAMIN-RICH GREEN MANGO JUICE DURING STORAGE



Month



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## Unstandardized Betas (Linear Coefficients)

ProdDate	Packaging	VitA	VitC	Color	Physical	SE7	SEdescriptive
	Foil	-14.218	<mark>-6.582</mark>	0.122	0.037	-0.026	0.007
	Glass	-0.170	<mark>-6.024</mark>	0.167	0.098	0.018	0.066
	PET	-10.836	<mark>-11.345</mark>	0.043	0.060	-0.305	-0.203
	Foil	-10.455	<mark>-8.973</mark>	0.219	0.052	0.010	0.111
	Glass	-15.609	<mark>-5.255</mark>	0.199	0.008	-0.020	0.096
	PET	-11.236	<mark>-11.727</mark>	0.139	0.098	-0.403	-0.279
	Foil	1.336	<mark>-3.345</mark>	0.009	-0.011	-0.156	-0.057
	Glass	-5.445	<mark>-3.764</mark>	-0.029	0.121	-0.095	-0.069
	PET	-5.718	<mark>-10.400</mark>	-0.066	0.090	-0.468	-0.328





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00 ings

of Set

Per

wing Size 200 wing per Pack

8

NUTRITIONAL FACTS



PRODUCT OF THE PHILIPPINES



NUTRITIONAL FACTS

mber of Servings	1.8
Amount per serving	Amount per 100mL
130	-70
0	0
33	17
26	13
0	0
40	20
Amount per Serving	% RENI
183	33%
75	100%
	mber of Servings Amount per serving 130 0 33 26 0 40 Amount per Serving 183 75

Manufactured By Nutrition Res of Science and Technolog quie City Phil

THIS PRODUCT IS NOT FOR SALE FOR RESEARCH AND DEVELOPMENT PURPOSES ONLY

PRODUCT OF THE PHILIPPINES

350 ml





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## CONCLUSIONS

RTD vitamin-rich green mango juice was produced at optimum conditions, standardized and quality controlled in pilot scale at BPSTPC, Malolos Bulacan.

Fortification of juice with Vitamins A and C at 100 % and 33% RNI was found to be technically feasible .



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## CONCLUSIONS

The glass and PE foil-packed juices have a shelf-life of 10 months while PET packed juices has 5 months when stored at 25-32°C and 41-63% RH under simulated market conditions.

The vitamin A and C content of glass-packed juice with opaque label and PE foil pouches, stored under simulated market conditions was retained and within the acceptable level (BFAD Guidelines on "Sangkap Pinoy" Seal Program) which is 1/3 and 100% RNI per 200ml for Vitamin A and C, after 10 months of storage



## CONCLUSIONS

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The type of packaging materials significantly affect the stability of the RTD vitamin-rich green mango juice.

PET packed juices are significantly less stable than the glass bottles and PE foil pouches.



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## RECOMMENDATIONS

The result of the stability tests can be used as basis for commercial production

Glass bottles and PE foil pouches are good packaging materials for this type of juices

Public-private sectors partnership is needed to accelerate transfer of food fortification technology.



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## FHANK YOU