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 locally-available raw materials to be used and marketed in order to generate added value product.
OBJECTIVE:

General:
To develop a technology and determine shelf-life of a ready-to-drink vitamin-rich green mango juice
OBJECTIVE:
Specifically:

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;
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.
Flow diagram of the study

**Laboratory Trial**
1. Raw material specs
2. Processing conditions
3. Packaging material

**Piloting and Standardization**
1. Established processing parameters
2. Adjustment in the formula
3. Product specs

**Shelf-Life Study**
1. Shelf-life data
2. Best before date
Flow diagram of RTD vitamin-rich green mango juice production
Flow diagram of RTD Vitamin-rich Green Mango Juice

Green mango puree  Water, Sugar & other ingredients  Fortificants (Vitamin A & C)

Mixing and pasteurization

Cooling

Filling

Homogeneity testing

Storage study

Quality control: Potency of Vitamin A and C, TSS raw mat syrup, etc.

Quality control: Temperature, Mixing Time

Temperature-

Vitamin C analysis

Color, pH, TSS, Vitamin A, Vitamin C, Sensory Evaluation, Microbiological analysis
Raw Material
Figure 2. Packaging Materials
## Parameters-Equipment used

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Equipment / Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>Minolta Chromameter</td>
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<tr>
<td>pH</td>
<td>pH meter</td>
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<tr>
<td>TA</td>
<td>Titrimetric method</td>
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<tr>
<td>TSS</td>
<td>Atago Refractometer</td>
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<tr>
<td>Vitamin A</td>
<td>HPLC method</td>
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<tr>
<td>Vitamin C</td>
<td>Titrimetric method</td>
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<tr>
<td>Sensory Evaluation</td>
<td>Hedonic &amp; QDA</td>
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<tr>
<td>Microbiological analysis</td>
<td>BAM</td>
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</table>
RESULTS
Results of vitamin A analysis of RTD vitamin-rich green mango
Results of vitamin C analysis of RTD vitamin-rich green mango
RESULTS

Results of sensory evaluation of RTD vitamin-rich green mango juice using 7pt. Hedonic Rating
COLOR EVALUATION (7pt. HEDONIC) of RTD VITAMIN-RICH GREEN MANGO JUICE DURING STORAGE

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**Production 1**

**Production 2**

**Production 3**

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Month
## Unstandardized Betas (Linear Coefficients)

<table>
<thead>
<tr>
<th>ProdDate</th>
<th>Packaging</th>
<th>VitA</th>
<th>VitC</th>
<th>Color</th>
<th>Physical</th>
<th>SE7</th>
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<tbody>
<tr>
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<td>Foil</td>
<td>-14.218</td>
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<td>0.037</td>
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<td>0.098</td>
<td>0.018</td>
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<td>-0.468</td>
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</table>
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.
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

- 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.
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.
ACKNOWLEDGMENT:

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- Bulacan Processing Services and Toll Processing (BPSTPC), Malolos Bulacan Center
THANK YOU