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Acceptability and Market Potential of Bengal Currant Con Carabao Mango Jam

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Abstract
This study evaluated the acceptability and market potential of Bengal Currant con Carabao Mango Jam using three different formulations: T1 (¾ cup Bengal Currant and ¼ cup Carabao Mango), T2 (½ cup each), and T3 (¼ cup Bengal Currant and ¾ cup Carabao Mango). A total of fifteen (15) respondents from San Quintin, Abra participated in a sensory evaluation using a 5-point Likert scale assessing appearance, aroma, taste, and texture. Results revealed that all formulations achieved a High Level of Acceptability, with T1 obtaining the highest mean scores across all sensory attributes. Analysis of Variance (ANOVA) indicated statistically significant differences among treatments ($p < 0.05$), confirming that fruit ratio significantly influences sensory perception.

Market potential was assessed in terms of supply availability, consumer demand, and production cost. Findings showed a High Level of Potential across all dimensions, suggesting favorable perceptions regarding affordability, accessibility of raw materials, and broad consumer appeal.

However, the study is exploratory in nature due to the limited sample size and reliance primarily on sensory evaluation without physicochemical or microbial analyses. Further laboratory validation, shelf-life testing, and expanded consumer studies are recommended to strengthen claims of commercial viability.

Keywords: Bengal Currant, Carabao Mango, Jam Formulation, Sensory Evaluation, Market Potential

1. Introduction

Fruit consumption plays a vital role in maintaining overall health due to its rich nutritional composition and protective health benefits (World Health Organization, 2023) [11]. Bengal currant (*Carissa carandas*) is a hardy fruit-bearing shrub known for its adaptability to various soil conditions and its sweet-to-sour berries (Yiahia, 2017) [12]. Carabao mango (*Mangifera indica* L.), widely regarded as one of the sweetest mango varieties in the world, is valued for its flavor, aroma, and high vitamin A and C content (Cortaga *et al*., 2022; Castillo-Israel *et al*., 2021) [5, 4].

Due to their perishable nature, both fruits are susceptible to postharvest losses. Processing them into jam offers a practical value-adding strategy that extends shelf life while creating economic opportunities for local communities. Previous studies have demonstrated that fruit proportion significantly influences the physicochemical and sensory properties of jam, including texture, flavor, and overall acceptability (Basu *et al*., 2010; Rafique *et al*., 2023) [3, 9].

Despite existing research on fruit-based jams, limited studies have examined the combination of Bengal currant and Carabao mango, particularly within the Philippine context. This study therefore aimed to evaluate the sensory acceptability of three jam formulations and assess their perceived market potential as a preliminary step toward product development and commercialization.

2. Methodology

Research Design

The study employed a mixed-method approach combining experimental and descriptive-comparative designs. The experimental component involved preparing three jam formulations with varying proportions of Bengal currant and Carabao mango. The descriptive-comparative component evaluated the level of acceptability and perceived market potential of each treatment.

Population and Sample
Fifteen (15) respondents from San Quintin, Abra participated in the study. The respondents, composed of nine females and six males, served as evaluators of the product's sensory attributes.

Treatments and Preparation
Three treatments were prepared while maintaining constant amounts of sugar (¼ cup) and lemon juice (1 tablespoon):
- **T1:** ¾ cup Bengal currant and ¼ cup Carabao mango
- **T2:** ½ cup Bengal currant and ½ cup Carabao mango
- **T3:** ¼ cup Bengal currant and ¾ cup Carabao mango

Data Gathering Instrument
A structured scorecard using a 5-point Likert scale was utilized to evaluate acceptability in terms of appearance, aroma, taste, and texture. Market potential was assessed based on supply availability, consumer demand, and production cost.

Statistical Treatment
Weighted mean was used to determine the level of acceptability and market potential. Analysis of Variance (ANOVA) was employed to determine significant differences among treatments at a 0.05 level of significance.

3. Results and Discussion

Level of Acceptability

Treatment	Appearance	VI	Aroma	VI	Taste	VI	Texture	VI
¾ cup benggal & ¼ cup mango	**4.29**	HLA	**4.13**	HLA	**4.49**	HLA	**4.24**	HLA
½ cup benggal ½ cup mango	**3.65**	HLA	**3.91**	HLA	**3.78**	HLA	**3.93**	HLA
¼ cup benggal ¾ cup mango	**3.69**	HLA	**3.73**	HLA	**3.62**	HLA	**3.56**	HLA

All three treatments achieved a High Level of Acceptability across appearance, aroma, taste, and texture. T1 consistently obtained the highest mean scores in all attributes.

Comparison of the significant difference between the Bengal Currant Jam Con Carabao Mango Jam when grouped according to treatments

Treatments	Appearance	Aroma	Taste	Texture
T1 (3/4 & 1/4)	4.29[a]	4.13[a]	4.49[a]	4.24[a]
T2 (1/2 & 1/2)	3.65[b]	3.91[b]	3.78[b]	3.93[b]
T3 (1/4 & 3/4)	3.69b	3.73[c]	3.62[b]	3.56[c]
F-Value	8.914	35.068	14.976	50.358
F-Prob Value	0.034	0.003	0.014	0.001

ANOVA results indicated statistically significant differences among treatments ($p < 0.05$), confirming that fruit ratio significantly affects sensory perception. The higher proportion of Bengal currant in T1 likely contributed to enhanced color intensity, improved sweet-sour balance, and firmer gel consistency due to natural pectin content. These findings are consistent with previous studies highlighting the influence of formulation on jam quality (Basu *et al*., 2010; Rafique *et al*., 2023) [3, 9].

Market Potential

Indicator	Mean	VI
Supply Availability	4.47	HLP
Consumer Demand	4.40	HLP
Production Cost	4.23	HLP
Overall Mean	4.37	HLP

The overall weighted means for supply availability, consumer demand, and production cost were interpreted as High Level of Potential. Respondents perceived the product as affordable, easy to produce, and suitable for all age groups. The availability of raw materials and relatively low production cost further suggest potential for small-scale commercialization. However, market viability conclusions are based on perception rather than actual consumer purchasing behavior or pilot market trials. No shelf-life testing or laboratory-based quality analyses were conducted.

4. Conclusions

The findings indicate that the T1 formulation (¾ Bengal currant and ¼ Carabao mango) demonstrated the highest level of sensory acceptability. The proportion of fruits significantly influenced appearance, aroma, taste, and texture. Additionally, the product showed promising perceived market potential in terms of supply availability, consumer demand, and production cost.

Nevertheless, the study is exploratory due to the limited sample size and reliance solely on sensory evaluation. Further validation through physicochemical analysis, microbial testing, shelf-life studies, and expanded consumer research is necessary before large-scale commercialization.

5. Recommendations

1. Adopt the T1 formulation as the base for further product refinement.
2. Conduct physicochemical analyses (e.g., pH, total soluble solids, moisture content) and microbial testing to ensure product safety and quality.
3. Perform shelf-life studies under various storage conditions.
4. Expand the respondent pool and incorporate consumer purchase intention and willingness-to-pay analysis.
5. Explore additional fruit combinations to diversify product offerings.

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