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# Chemical and Organoleptic Characterization of Pawpaw and Guava Leathers

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**Abstract:** An investigation was carried out to evaluate the chemical and organoleptic properties of pawpaw and guava leathers. Guava leather was significantly higher in protein (2.67%) and fat (1.37%) than other samples. There was no significance difference in the crude fibre of pawpaw (2.4%) and guava (2.67%) leathers. This was also observed in the ash contents with pawpaw leather having (2.67%) and guava leather (2.87%). Guava leather is significantly higher in fruitiness smell and overall acceptability. Guava leather showed better compositional attributes.

**Key words:** Pawpaw % guava % chemical % organoleptic % leathers

## INTRODUCTION

Pawpaw (*Carica papaya*) is popularly grown in the tropics. It is pleasant in taste and has great application in the production of food confectioneries such as jam. It can also be used medicinally to treat worms. It contains protein (0.6%), moisture (85%), sugar (10-13%).

Guava (*Psidium guajava* L.) is a fruit with pleasant sour-sweet taste and a good source of vitamin C and dietary fibre. It contains almost five times as much vitamin C as oranges.

Pawpaw and guava fruits grow in abundance even the wild. These fruits though produced in considerably large quantities are under utilized except for eating in the fresh form. Fresh fruits are more is liable to deteriorate under tropical conditions owing to high ambient temperatures and humidities, pest and disease infestations, poor handling and poor storage facilities[1].

One of the best ways of utilizing and preserving fresh fruits is processing them into leathers. Leathers although not very popular in Africa unlike in the North America is manufactured by dehydrating a fruit puree into a leathery sheet [2]. Leathers can be consumed as a confection or cooked to give a sauce [3] and can be made from a wide variety of fruit [4-6]. There is a dearth of information on the chemical and organoleptic properties of pawpaw and guava leathers in the tropics. Hence this study is aimed at evaluating the chemical and organoleptic properties of Pawpaw and Guava leathers.

## MATERIAL AND METHODS

**Raw materials:** Fresh fruits of Guava (Al-habad) variety and Pawpaw (pink solo) were obtained from National Horticultural Research Institute (NIHORT) Idi-Ishin in Ibadan, Nigeria.

**Sample preparation:** Guava and Pawpaw fruit leathers were prepared separately by peeling the fruits and adding 20% of sugar 0. 2% of citric acid and 0.1% of sodium benzoate to 80% of their pulp. It was then boiled, cooled and spread on trays oiled with glycerol. This was then dried at 60°C for 8 h before packaging for analysis.

**Chemical analysis:** Moisture content, crude protein, fat, carbohydrate, crude fiber, ash and vitamin c determined using AOAC [7].

**Organoleptic evaluation:** Organoleptic evaluation by 10 panelist was carried out using a nine-point hedonic scale (1 = dislike extremely 9 like extremely) water was also provided for the testers to rinse their month after each evaluation under a well lighted evaluation room [8].

**Statistical analysis:** Data were subjected to analysis of variance and the means were separated by Duncan Multiple Range Test [9].

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Table 1: Chemical composition of fresh pawpaw and guava fruits and leathers

| | Moisture (%) | Crude protein (%) | Fat (%) | Carbohydrate (%) | Crude fibre (%) | Ash (%) | Vitamin C (mg/100 g) |
|---|---|---|---|---|---|---|---|
| Fresh fruit | | | | | | | |
| Pawpaw | 87.67a | 0.63d | 0.20c | 9.6d | 0.80c | 0.73b | 83.33c |
| Guava | 82.00b | 1.37c | 0.57b | 14.23c | 1.37b | 0.73b | 260.00a |
| Leather | | | | | | | |
| Pawpaw | 18.47c | 2.10b | 0.49b | 76.80a | 2.40a | 2.67a | 74.70d |
| Guava | 16.40c | 2.67a | 1.37a | 74.50b | 2.67a | 2.87a | 237.00b |

Table 2: Organoleptic properties for guava and pawpaw leathers

| Sample | Sweetness | Fruitiness | Smell | Chewiness | Toughness | Colour | Overall acceptability |
|---|---|---|---|---|---|---|---|
| Guava | $5.2^{b}$ | $6.2^{a}$ | $6.4^{a}$ | $6.8^{a}$ | $6.8^{a}$ | $6.4^{a}$ | $6.4^{a}$ |
| Pawpaw | $7.0^{a}$ | $5.0^{b}$ | $5.0^{b}$ | $5.4^{a}$ | $5.4^{a}$ | $4.8^{b}$ | $5.2^{b}$ |

Means in the same column followed by the same letter are not significantly different from each other at $p < 0.05$

## RESULT AND DISCUSSION

**Chemical composition of fresh pawpaw and guava fruits and leathers:** It was observed that the moisture content of fresh pawpaw fruits was significantly higher than other samples (Table 1). The moisture content of pawpaw and guava leather were not significantly different from each other. This difference could be due to drying during processing to leather.

Crude protein and fat content of guava leather was also significantly higher than other samples. There was no significant difference in the crude fibre and ash contents of pawpaw and guava leathers although the ash contents of these leathers are higher than their fresh counterparts this may be due to reduction in moisture content as a result of processing and varietal influence. Also, pawpaw leather was significantly higher in carbohydrate as compared with other samples. Vitamin C contents of both leathers were significantly lower than fresh fruits due to processing. Vitamin C is known to be unstable as temperature increases.

**Organoleptic properties of guava and Pawpaw leathers:** Table 2 shows the organoleptic characterization of guava and pawpaw leathers. Guava leather was significantly higher than pawpaw leather in fruitiness, smell, colour and overall acceptability there was no significant difference between the samples in chewiness and Toughness. However, Pawpaw leather was higher in sweetness.

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