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## Characterization of the Juice Drink from *Annona muricata*

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### Abstract

*This study is to characterise the pulp and juice from *Annona muricata*. The fruits was washed, cut and weighed and the outer coat removed. The pulp was then macerated in a 1 litre of water and filtered to get the desired fruit juice. 5g of carboxyl methyl cellulose stabilizer; 5g of sodium benzoate as preservative, 0.4g of citric acid, 20g of sugar and 0.2g of colourant were equally added. The bottled drink was pasteurized at 70°C for 30mins. The moisture content, ash content, carbohydrate, fat content, calorific value and total solids gave the values: 87.85%, 6.50%, 3.05%, 0.00%, 10.65kJ, 6.80% respectively. The atomic absorption spectrophotometer analysis (AAS) of the pulp and juice showed that they contain essential minerals like magnesium, iron, copper, cobalt, zinc, chromium, lead and cadmium in various concentrations. Microbial analysis showed no fungal growth on nutrient and potato dextrose agar. The prepared soursop drink compared favourably with commercially available juice in the market and as such, is recommended as a food supplement.*

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The primary necessities of man are food, clothing and shelter. All these are met by plants. Most of these plants instead of allowing them to be a waste and cause environmental pollution, are made into useful products (Cowan, 1990).

*Annona muricata* (soursop) belongs to the family *Annonaceae*, genus *Annona* with over 60 species. It is one of the most popular fruits of the tropics. It is green with soft skin and thorns. It is eaten as fresh fruit and can be used after straining for drinks (Ihekoronye & Ngoddy, 1985). Fruits are important foods since they are the source of many essential vitamins, minerals and other food components. Some contain moderate amounts of carbohydrate in the form of glucose, only a few are high in sugars such as dried fruits. Calories can be added to fruits, in the form of sugar, starches and fats in prepared products. Fruits vary widely in nutrient values depending on sunlight and growing climate (Peckhan and Gladys, 1974).

In Nigeria today, most of the juice produced are synthetic while some are imported. The demand for juice made from natural sources has increased and this demand can be met from local fruits. Almost all edible fruits can be made into juice. Fruit juice products provide economic utilization of plant fruits (Maudkordylas, 1981).

The aim of this study therefore, was to prepare a soft drink from soursop fruit and then, subject it to full characterization using chemical analytical methods. The characterized soft drink was compared with commercially available ones.

### **Materials and Method**

The *Annona muricata* (soursop) fruit was bought at Eke - Ekwulobia in Aguata Local Govt. Area of Anambra State. The method of Peckhan and Gladys (1974) was employed in the drink preparation but with some modifications. The healthy ripe fruit was washed and the bark removed. It was cut into four parts and weighed. 752g of it was macerated in 1000ml of water. This was followed by filtration to get the concentration. Ingredients such as 5g of carboxyl methyl cellulose, 5g of sodium benzoate, 0.4g of citric acid (to pH 5.0), 20g of sugar and 0.2g of colourant were added and mixed thoroughly and filtered again and again to remove particles.

The bottled drink was pasteurized at 70°C for 30mins. The product was subjected to chemical tests.

### **Analysis**

The ash, moisture, fat, protein, fibre, carbohydrate, calorific, pH, total solids, specific gravity were determined (Mainard, 1970).

### *Characterization of the Juice Drink from Annona muricata*

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Product shelf life was determined by visual inspection such as level of sedimentation, brilliance (clarity) and fungal growth over a period of 6 months on storage. Plate count analysis was also carried out using nutrient agar and potato dextrose. Atomic absorption spectrophotometric screening for trace elements was done using shimadzu Aa – 6701.

### **Results and Discussion**

The results of the proximate analysis are presented in Table 1 below

**Table 1: Results of the Proximate Analysis of *Annona Muricata* (Soursop) Drink**

S/N	Parameter	Values (%)
1	Ash	6.50
2	Moisture content	87.85
3	Crude fat	0.00
4	Crude protein	0.057
5	Crude fibre	1.67
6	Carbohydrate	3.05
7	Calorific value	10.65

Ash content of 6.50% was within the range of most processed drinks and gives an indication of the mineral content of the fruit. The moisture content of 87.85% is high which is indicative of the relative humidity as well as the climate condition of the area of harvesting. An area of higher humidity will give relatively higher moisture content. The fat content is 0.00% showing absence of fat in the juice. The fibre value of 1.67% indicates the presence of roughages which are necessary structural supports of all cells especially of the brain and nerves (Pyke,1981). The carbohydrate and calorific values of 3.05% and 10.65KJ implies a good energy drink. The essential attributes (ie pH, total solids, specific gravity and shelf life) of the developed soursop fruit juice were similar to those of other commercial fruit juices as shown in Table 2 below.

**Table 2: Physico – Chemical and Microbiological Analysis of Soursop (*Annona Muricata*) Drink as Compared with some Commercial Fruit Juices**

S/N	Parameter	Soursop	Five Alive	Chivita drink
1	Ph	5.2	5.2	5.1
2	Total solids	6.8	9.2	10
3	Specific gravity	0.95	1.05	1.02
4	Sedimentation	N	N	N
5	Cloudiness	Slight	Moderate	Slight
6	Growth on nutrient agar	N	N	N
7	Growth on potato dextrose	N	N	N

These indicate that this newly produced soursop fruit drink could compete favourably with locally and internationally made ones which are currently in the market. Although sedimentation was not recorded, slight cloudiness was noticed in the bottled soursop drink. There is therefore the need for further work in order to improve upon the quality and enhance its marketability. There was no fungal or microbial growth noticed on the plate when nutrient agar and potato dextrose agar were used. This showed that the drink was free from any spoilage microorganisms. Trace metal analysis showed the presence of essential elements in both the pulp and the juice (Table 3).

**Table 3: Trace Metal Analysis of the Pulp and the Fruit Drink from Sourpsop (*Annona muricata*)**

S/N	Metals	Pulp (mg/g)	Fruit drink (mg/g)
1	Iron	0.756	0.370
2	Magnesium	0.930	0.252
3	Copper	0.001	0.0004

### *Characterization of the Juice Drink from Annona muricata*

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4	Zinc	0.480	0.150
5	Cobalt	0.185	0.090
6	Lead	0.0001	0.0001
7	Cadmium	0.0001	0.0001
8	Chromium	0.005	0.001

Iron and magnesium, amongst other elements, had the highest concentration which is needed as a constituent of bones and teeth, as a co – enzyme in general metabolism, smooth muscle action. Iron is needed for growth and to build up reserves for the physiologic stress of adolescence. The women’s need for iron is increased greatly during pregnancy to maintain the increased number of red blood cells (Klein, 1992).

#### **Conclusion**

The results showed that this soursop drink which was produced from fresh raw materials compared favourably with existing commercial ones which are known to be formulated from concentrates. This product has additional advantages of being cheaper and more affordable to consumers. The results also indicate that soursop fruits could be utilized in the producing countries to produce value-added products such as the soursop drink reported here and thereby create and increase the income of farmers and industrialists in this country.

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