

PROXIMATE ANALYSIS & CHARACTERIZATION OF THE SEED AND OIL OF *ANNONA MURICATA* (SOORSOP)

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Abstract

Annona muricata is a plant that grows in the tropical West Africa. It has sweet fruits, not really sour as its name suggests. The seeds were removed from the fruits and dried for eight (8) days after which it was grinded to powder. Direct method of extraction was used to extract the oil for analyses. The proximate analyses carried out to determine the moisture content, ash content, acid value, iodine value and saponification value confirmed that the seed have moisture content (2.17%), ash content (60%), acid value (10.02), free fatty acid value (5.04), iodine value (96.44) and saponification value (157). The results shows that the seed is rich in mineral elements with the oil less susceptible to oxidative rancidity, non-drying and can be used for the production of soaps, shampoo etc.

Introduction

Annona muricata is a plant that grows in the tropical West Africa. The trees are about 7.5 – 9.0m tall. Young branchlets are rusty – hairy with smooth, glossy dark green leaves which are oblong (to elliptical) and pointed at both ends. The fruit is more or less oval or heart-shaped, though it tends to be lopsided or curved. The fruit is variable in size, ranging from 10 – 30cm long and up to 15cm width and can weigh as much as 6.8kg (Cowan, 1990). The skin is dark green in the immature fruits, becoming slightly yellowish – green before the mature fruits is soft to touch. The inside of the skin is cream coloured and granular. The white flesh which is the edible part of the flesh is fibrous and juicy and separates easily from the rind. The fruit is segmented with some segments containing a single oval, smooth, hard black seed of 1.25 – 2.00cm long. A large fruit may contain from a few dozen to 200 or more seeds (Ihekoronye and Ngoddy, 1985).

Fruits generally are important foods since they are the source of many essential vitamins, minerals and other food components. Some contain moderate amount of carbohydrate in the form of glucose, starch and fats. The varied nutrient values are to a large extent, dependent on the sun light and growing climate (Peckham and Gladys, 1974).

Proximate analyses which includes acid value determination, moisture content, saponification value, percentage oil yield, iodine value and ash content enables one to know the exact amount in each fruit consumed as well as other areas or uses to which the fruit can be put.

Materials and Method

The seeds of *Annona muricata* (soursop) that was used for the work were bought at Eke Market, Ekwulobia in Aguata Local Government Area of Anambra State. The seeds were removed from the fruits and air dried for 8 days. The seeds and their coats were grinded into a powder using manual grinder. Standard methods were employed for the proximate analyses and characterization-extraction and determination of the % oil, ash content, moisture content, acid value, free Fatty acid ($1/2$ of the acid value), iodine value and saponification value, (Mamman, 2000; Amos and Jones, 1975).

Results and Discussion

The results on the proximate analyses of the seed of *Annona muricata* are shown in Table 1. The results obtained shows that the % of oil yield was low (35%), light in colour and did not solidify at room lamp therefore, it is an unsaturated oil. The ash content was found to be 60%. It shows that the seeds contain good quantity of mineral elements which makes them useful in animal feed formulation and production of fertilizer. The moisture content was 2.17%. The low percentage is indicative of a long shelf life i.e. the length of time the seeds remain usable or viable.

The acid value of the seed was low (10.08) and therefore, less susceptible to oxidative rancidity. It is also fit for human consumption. The low value of free fatty acid is indication of the quantity of fatty acid contained in the seeds.

With a value of 96.44 for the iodine content, the oil from *Annona muricata* seeds can be said to be non-drying.

The result of the saponification value was high (157) which proves that it contains fatty acids of low mean molecular mass and could be used for soaps, shampoo, varnish etc.

Table 1: Results of the proximate analyses and characterization of the oil of *Annona muricata*.

S/N	Parameters	Values	Characterization
1	Percentage of oil yield	35%	
2	Colour of oil	Light Brown	
3	Appearance	-	Do not solidify @ room temp. It is an unsaturated oil.
4	Ash content	60%	Rich in mineral elements. Useful for animal feeds & Fertilizer production.
5	Moisture Content	2.17%	Low content implies long shelf life.
6	Acid Value	10.08	Less susceptible to oxidative rancidity. Fit for human consumption
7	Free Fatty Acid	5.04	Low fatty acid content

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8	Iodine Value	96.44	Non-drying oil
9	Saponification Value	157	Can be used for toilet soaps, shampoo, varnishes etc.

Conclusion

The results of the analyses on the seeds of *Annona muricata* shows that the seeds are very useful to man. The low acid value qualifies it fit for human consumption and its high saponification value makes it a good raw material for soaps, shampoo, varnish etc.

Recommendation

The findings in this research clearly brings to light, the usefulness of both the seeds and oil of *Annona muricata*. Manufacturers of animal feeds, fertilizer and toiletries should explore their use. Furthermore, more research into this seed of *Annona muricata* is encouraged to ascertain other viable content.

References

- Cowan, S. R. (1990): *Fruit in the Encyclopedia Americana*. 12. London: Grolier Inc. Publishers.
- Ihekoronye, A. I. & Ngoddy, P. O (1985). *Integrated food science and technology for the tropics*. London: Macmillan Publishers.
- Peckham, K. C.& Gladys, G. S (1974). *Foundation of food preparation*. New York: Macmillan Publishing Co.
- Mamman, O.A; Aliya, A; Sayir, M. H; Esther, J.B & Emmanuel, S.J (2000): *Practical Manual of Food Technology, Nutrition and Dietetics School*. Kaduna: Kaduna Polytechnic Publishers.
- Amos, A.J & Kent-Jones D. W (1975): *Nitrogen and crude protein in modern cereal chemistry*. New York: Liverpool Publishers.