

Short Communication

Pak J Sci Ind Res 2002 45 (6) 386-387

ANALYSIS OF SELECTED NUTRIENTS OF WINES OBTAINED FROM FELLED PALM TREE

F O Abulude* and L Lawal

Department of General Studies, Federal College of Agriculture, Akure, Ondo State, Nigeria

(Received 8 November 2000; accepted 6 September 2001)

Palm tree is a "Wonder" tree that is very useful to man. The fruit of this tree is edible and leaves are used for making roofs, mats, baskets, walls etc. The wood can be used to make fence, furniture, bridge etc. The sap makes a pleasant drink, and palm wine can be made from it. Palm sugar is obtained from the sap of several species of palm in tropical regions of the world (African Encyclopedia 1974). The chief sugar found in the sap is sucrose, present between 10-16% (Stewart 1987).

The wine from Felled palm tree is obtained by tapping the base of the inflorescence of the stem just below the terminal leaves. Before the tapping, there are preliminary processes, which must be carried out. For example the Felled palm tree is left to age for about five days after a hole is made at the point of tapping thereby at the end of about 24 hours and the juice starts coming out, which is collected in a suitable container (Oshodi 1986).

The natural traditional alcoholic beverage in Nigeria has been bottled by Federal Institute of Industrial Research and it ranks with bottled beer (Ihekoronye and Ngoddy 1985).

The wine obtained from "Felled palm tree" has been analysed for its chemical compositions. Results showed that the wine contains dextrose, lactose, maltose 12.16, 24.3, 23.0 g 100 cm⁻³ respectively. Total acidity (0.64%), fixed acidity (0.43%), alcohol (4.21%), ascorbic acid (9.20 mg 100 cm⁻³), and the percentage content of cyanide is negligible. The mean values for iodide and chloride are 764 mg l⁻¹ and 452 mg l⁻¹ respectively. Chloride was found to be abundant. The specific gravity of the wine has a mean value of 1.01, temperature 28°C while pH was 6.

From previous reports (Chinnaras 1968; Faparusi and Basir 1972; African Encyclopedia 1974) it was confirmed that palm wine has a high acceptability and desirable functions and storage characteristics. The present work is undertaken to obtain more information on the chemical composition of the sample of palm wine from felled palm tree.

The pH of the wine was determined with Hanna instrument pH meter equipped with combined electrode. Ascorbic acid

(Vitamin C) content was determined by direct titration against 2, 6-dichlorophenol indophenol dye (Ibitoye 1990). Aldose sugar (dextrose, maltose and lactose) analysis was made by methods of Pearson (1976). Specific gravity was determined by the methods of Adeyeye (1995). Total acidity, fixed acidity and alcohol content were also determined by methods of Pearson (1976). Iodide, chloride and cyanide content were carried out using Vogel's method (Vogel 1961).

Chemical composition of wine from Felled palm tree is presented in Table 1. The wine is rich in iodide (754 mg l⁻¹) and chloride (452 mg l⁻¹). The daily recommended requirement reported for normal iodide is between 0.15-0.30 mg per day (Asaolu and Asaolu 1999). If 1.0 litre of the wine is taken per day it means one would have consumed about 76 mg of iodine in a day, which is more than normal recommended daily requirement of iodine. Statistics from UNICEF (Anon 1999) have shown that over 20% of the Nigerian populace are iodine deficient. The consumption of this may be a ready source of iodine. The wine is concentrated in chloride. This will be an enhancing factor in osmotic balance in the cell and production of hydrochloric acid in the gastric juice of the stomach.

Ascorbic acid content (9.20 mg 100 cm⁻³) is similar to that reported by Oshodi (1986) but low compared to ascorbic acid content of orange, grape, pears, and higher than that recorded in Burukutu (an alcoholic beverage, Odetokun 1997). According to Chinnaras (1968) Faparusi and Basir (1972) and Oshodi (1986), somebody consuming about 1.0 litre of palm wine is taking 93 mg of ascorbic acid and so it is recommended that frequent consumption of palm wine is good for the body. The

Table 1
Composition of Felled palm tree wine.

Characterisation	Amount (Mean ± SD)
pH	6.00 ± 0.05
Temperature (°C)	28.00 ± 0.30
Specific gravity at 20°C	1.01 ± 0.08
Dextrose (g 100 cm ⁻³)	12.16 ± 2.10
Lactose (g 100 cm ⁻³)	24.30 ± 2.25
Maltose (g 100 cm ⁻³)	23.00 ± 2.30
Total acidity (%)	0.64 ± 0.02
Fixed acidity (%)	0.43 ± 0.03
Ascorbic acid (g 100 cm ⁻³)	9.20 ± 0.10
Ash (%)	0.40 ± 0.02
Alcohol (%)	4.2 ± 0.10
Iodide (mg l ⁻¹)	764 ± 0.75
Chloride (mg l ⁻¹)	452 ± 0.54
Cyanide (%)	ND

ND-- Not detected.

*Author for correspondence

levels of dextrose, lactose and maltose 12.16, 24.3 and 23.0 g 100 cm⁻³ respectively are much higher than those reported for apples, blackcurrants, grape fruits and *nauclea latifolia* fruit (Amoo and Lajide 1999).

The pH and specific gravity of the wine are compared favourably well with those reported by Amoo and Lajide (1999), for commercial fruit juice. Alcoholic content reported by Chinnaras (1968), Faparusi and Basir (1972), Oshodi (1986) and Odetokun (1997) has a significant difference because days obtained are varied but the value obtained here is compared favourably without considering the varied days. Total acidity (0.64%) and fixed acidity (0.43%) are in agreement with the reported values for EEC standards for composition of wines (Pearson 1976).

Key words: Selected nutrients, Wine, Felled palm tree.

References

- Adeyeye E I 1995 Studies of the chemical composition and functional properties of African Yam Bean (*Sphenostylis stenocarpa*) flour. Unpublished PhD Thesis, 121-122.
- African Encyclopedia 1974 Oxford University Press, London p387.
- Asaolu S S, Asaolu M F 1999 Iodine distribution in some Nigerian leafy vegetables. *J of Technoscience* **3** pp 33-34.
- Amoo I A, Lajide L 1999 Chemical composition and nutritive significance of the fruits of *Nauclea latifolia*. *Riv Ital Sostanzo Grasse* 331.
- Anon 1999 *Focus of Nutrition*. Nigerian Daily Time, November p 28.
- Chinnaras E 1968 *The Preservation and Bottling of Palm Wine*. Research reports no. 38 of Federal Institute of Industrial Research, Lagos, Nigeria.
- Faparusi S I, Basir O 1972 Factors affecting the quality of palm wine and period of storage. *W/A J Bio and Appli Chem* **15**(2) 22-28.
- Ibitoye A A 1990 *Laboratory Manual on Basic Analytical Methods*. Research report of Analytical Laboratory, Crop Production Department, Federal University of Technology, Akure, Nigeria.
- Ihekorony A I, Ngoddy P O 1985 *Integrated Food Science and Technology for Tropics*, Macmillan Publishers pp 321-322.
- Odetokun S M 1997 Chemical changes and nutritive values of burukutu. *Nahrung* **44** 375-377.
- Oshodi A A 1986 Monitoring the composition changes in palm wine from Felled palm tree from the first day until the flow of wine ceased. *Nig.J of Applied Science* **4** (1) pp 13-16.
- Pearson D 1976 The chemical analysis of foods. *J & A Churchill* pp 324-335.
- Stewart D 1987 *Sugar Palm*. McGraw Hill Encyclopedia of Science and Technology, **17** p 541.
- Vogel A I 1961 *A Textbook of Inorganic Analysis*, 3rd ed., pp 262-352.