



Medicinal Utilization of Water Melon (*Citrillus Lanatus*) in Different Parts of Kaduna Southern Guinea Savanna of Nigeria

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Abstract

Proximate and medicinal utilization of watermelon (*Citrillus lanatus*) was examined in different parts of Kaduna Southern Guinea Savanna of Nigeria. Two hundred (200) questionnaires were randomly administered and one hundred and eighty-five (185) were retrieved. The results showed that watermelon can be used in the treatment and prevention of various diseases such as eye problems, skin disease, hypertension; reduce formation of kidney stones, renal stones, urinary stones, cough and catarrh, tuberculosis and many more. Majority (33.5%) of the respondents used grinding methods in preparing the seeds before use and the herbal mixture prepared are consumed fresh. The result of the proximate analysis showed that the seed contains 89.46% dry matter, 59.4% carbohydrate, 13.56% protein, 9.24% lipids. Other compositions in the seed are ash content (7.49%), crude fibre (8.81%). Demographic characteristics of the respondents were also examined. The percentage of male was 48.1% while that of female was 51.9%. Majority (52%) of the respondents is aged between 31 – 40 years and 53.5% are married. 54.6% of the respondents had secondary education while 86% had no formal education and majority (46.5%) is traditional healers. It is however recommended that agroforestry practices should be encouraged in the local government areas. Consequently, it must be ensured that watermelon fruits be the agricultural crop to be incorporated into the system for sustainability of the medicinal uses of the plant.

Keywords: Watermelon; Medicinal Utilization; Proximate; Kaduna State

Introduction

Fruits are concentrated source of natural components. These natural components are plant derived materials performing a key role in maintaining human health, especially in disease prevention, growth and development. In the recent era, phyto-nutrients, particularly from fruits and vegetables, are becoming popular due to consumer awareness regarding their health enhancing potential [1]. Water melon (*Citrullus lanatus* Thumb *Matsum and nakai*) belongs to the family of Cucurbitaceae. It is an important horticultural crop mostly known for its sweet and juicy fruit, grown in warm climates

all over the world [2,3]. In Africa, watermelon accounts for 5.4% of the harvested area devoted to vegetable production and this contributed to the world watermelon production with 4.6% of 99,194,223 tonnes [4].

Watermelon seeds are good sources of vitamins, they are equivalent to multivitamin B complex supplement we consume [5]. Some of the vitamin B present in watermelon seed includes niacin, foliate, thiamine, riboflavin, vitamin B6 and pantothenic acid. Hundred grams (100gm) of watermelon seed provide 19% daily value of Niacin which is essential in maintaining the nervous system, digestive system

and skin health. In Asian and Middle Eastern countries, watermelon seeds are collected, dried and roasted for eating; watermelon seeds are also used in making soups and other beneficial products like watermelon seed oil, watermelon seed tea and watermelon seed extracts [6]. When we think of health benefits of watermelon, we tend to ignore the health benefits of watermelon seeds. Thus, we might need to rethink spitting or discarding watermelon seeds. Relatively, little is known about the importance of watermelon seeds in Africa. A survey carried out in Benin indicates that watermelon seed may be more important as food source than previously anticipated [7]. From a nutritional point of view, the red and sweet watermelon seed is an important source of carotenoids including lycopine and B-carotene, a pre-cursor of Vitamin A [8,9].

Watermelon seeds and flesh are rich in citrulline which can be metabolized to arginine. The amino acid is a substrate for the synthesis of nitric oxide and it plays a role in cardiovascular and immune functions [10]. Based on this, it will be of interest to study medicinal utilization of watermelon in different parts of Kaduna Southern Guinea Savanna to broaden the understanding of the diversity within the plant, develop local conservation strategies and to identify the potential of the fruits and seeds to enhance food security, medicine, and nutrition and income generation for the public.

Materials and Methods

Study Area

The study was conducted in different parts of Kaduna Southern Guinea Savanna of Nigeria. Kaduna South is located at latitude 9°N and 12°N and longitude 8°E and 10°E of prime meridian respectively. The vegetation in the local government area is southern guinea savanna with annual rainfall for Kaduna South lies between 1,200mm – 1700mm per annum. The study area occupies major part of the agricultural economy of the State; farming and livestock rearing are their main occupation [11,12].

Sampling Technique

Two hundred (200) questionnaires were randomly administered among the respondents in different parts of the

local government areas. The questionnaire was designed in English language and administered by group of interviewers who can speak and write in local dialects. Face-to-face method of interviews was adopted.

Proximate Analysis

Proximate analysis of the seeds was carried out as recommended by Association of Analytical Chemist (AOAC) at Ahmadu Bello University, Zaria, and Kaduna State. Nigeria.

Data Collection and Analysis

Data for this study were collected from primary source. The data collected included the demographic characteristics of the respondents, medicinal preparation of watermelon seeds, ailment forms, preparation and method of administering watermelon seed herbal as well as proximate analysis of watermelon seeds. Descriptive statistics such as percentage and frequency distribution tables were used.

Results and Discussion

Demographic Characteristics of the Respondents

The data on demographic characteristics of the respondents is presented in Table 1. The key demographic parameters of interest are age, marital status, gender, educational background and occupation. Results in the table showed that 52.0% are between the age brackets of 31-40 years. This implies that they are at the middle and economically active age. 99% of the respondents are married, 76% are single, 4% are divorced while 6% are widowed. This is an indication that married people know the value and economic importance of watermelon seeds and fruits in curing and prevention of diseases. Gender distribution revealed that women form the majority (51.9%) in the use of the fruits and seeds against their men counterpart (48.19%). The results from the table also indicated that only 8.6% of the respondents had no formal education. The rest had one form of education or the other ranging from tertiary (16.8%), secondary (54.6%), Arabic school (8.1%). This result agrees with the findings of Sodimu, et al. [13] which showed that age has positive influence in society. Occupation results showed that majority (46.5%) of the respondents are traditional healers.

Variable	Respondents	Percentage
Age in Years		
10 – 20	3	1.6
21 – 30	9	4.9
31 – 40	86	52
41 – 50	42	22.7

51 – 60	25	13.5
>60	10	5.4
Marital Status		
Married	99	53.5
Single	76	41.1
Divorced	4	2.2
Widowed	6	3.2
Gender		
Male	29	48.1
Female	96	51.9
Educational Level		
Tertiary	31	16.8
Secondary	101	54.6
Primary	22	11.9
Arabic School	15	9.1
No Formal Education	16	8.6
Occupation		
Traditional Healers	86	46.5
Herbs Traders	78	42.2
Civil Servants	21	11.3
Total	185	100

Table 1: Demographic Characteristics of Sampled Respondents.

Method of Medicinal Preparation of Watermelon Seeds

Table 2 shows various methods used by the traditional healers, herbs traders in herbal preparation of watermelon seeds and fruits for prevention and curing of various diseases. The result shows that the majority (33.5%) of the

respondents used grinding method of preparation. 27.6% used maceration / crushing methods, 25.4% used decoction methods while 13.5% used boiling in water. This result is in accordance with that of Ogunkalu, et al. [14] whose researches proved the effectiveness of specific alternative treatments.

Methods	Frequency	Percentage
Boiling in Water	25	13.5
Maceration / Crushing	51	27.6
Grinding	62	33.5
Decoction	47	25.4
Total	185	100

Table 2: Responses to Methods of Herbal Preparation of Watermelon Seeds.

Diseases, Forms and Method of Administration of Watermelon Seeds

Table 3 shows various ailments and diseases watermelon seeds and fruits can be used to cure / prevent ranging from eye problems, skin diseases, hypertension, cough, tuberculosis. Forms and methods of administration of the fruits and seeds vary depending on the ailment. The

preparation and method of administration are in agreement with the work of Abubakar who showed that various methods of administration are effective in treating a wide range of major and minor medical condition using medicinal plants. Table 3 further revealed that there is standardization of measurement in taking the herbs with the use of short cup called "Gaasi" in Yoruba, teaspoon and tablespoon.

S/No	Diseases	Preparation	Status	Method of Preparation
1	Prevention and cure of eye problem	Boil in water for about 30 minutes	Fresh	Short glass cup of the preparation is taken twice daily and to rinse the eye three times daily
2	Skin diseases	Boil together with the fresh fruit for about 35 – 40 minutes	Fresh	For bathing in the morning and night. Also half tea cup to be taken at night before going to bed
3	Hypertension	Cooked with vegetable like preparing 'egusi soup'	Dry	To be taken twice a day morning and late in the night
4	Kidney stones, renal stones and urinary stones	Decoct the fruit and seeds together	Fresh	Half tea cup is taken twice a day
5	Cough and Catarrh	The seeds are grounded, spread on a meal or soup	Dry	Two tablespoons to be taken in the morning and at night
6	Tuberculosis	Ground the seeds with zogale root and soak them in water for 45-60minutes	Dry	Two tablespoons to be taken in the morning and at night
7	Anxiety and Impotency	Consume few seeds together with the fresh fruit	Fresh	Average of 25 - 30 seeds / day

Table 3: Ailments, Forms, Preparation and Methods of Administering Watermelon Herbal.

Proximate Analysis

Table 4 revealed proximate composition of watermelon seeds to be effective for curing and prevention of major and minor medical conditions. The seed comprises of 89.46% dry matter; 59.59% carbohydrates, 13.56% protein and

10.54% moisture content. Other compositions include lipid (9.24%), crude fibre (8.81%) and ash content (7.49%). Thus, watermelon seed and fruit can be recommended for children for strong bones development and prevention of rickets deficiency. No wonder, the fruits and seeds are good supplement for adult with protein deficiency.

S/No	Constituents	Percentage (%) Composition
1	Dry matter (DM)	89.46
2	Moisture Content (MC)	10.54
3	Crude Fibre (CF)	8.81
4	Ash Content (AC)	7.49
5	Lipid	9.24
6	Crude Protein (CP)	13.56
7	Carbohydrate	59.17

Table 4: Proximate Analysis of Watermelon Seeds.

Nutritional Value of Fresh Watermelon Fruits

Table 5 shows nutritional value of fresh watermelon as one of the commonly consumed fruits in many countries of the world. The fruits contain more than 91% water and

up to 7% of carbohydrates. It is a rich source of lycopene and citrulline. Watermelon rind contains more amounts of citrulline than flesh. However, watermelon has a number of essential micronutrients and vitamins. Thus, it prevents against stroke and coronary heart diseases [15].

Components	Nutrient Value	Percentage of Recommended Daily Allowance
Energy	30 Kcal	1.50%
Carbohydrates	7.6 g	6%

Protein	0.6 g	1%
Total Fat	0.15 g	0.50%
Dietary Fiber	0.4 g	1%
Vitamins		
Niacin	0.178 mg	1%
Pantothenic Acid	0.221 mg	4.50%
Vitamin A	569 mg	19%
Vitamin C	8.1 mg	13.50%
Electrolytes		
Potassium	112 mg	2.50%
Iron	0.24 mg	3%
Manganese	0.038 mg	1.50%
Zinc	0.10 mg	1%
Phyto-nutrients		
Carotene-alpha	303 µg	-
Lycopene	4532 µg	

Table 5: Nutritive value per 100 g of flesh.

Source: USDA National Nutrient Database.

Conclusion and Recommendation

The significance of herbal treatment using watermelon in different parts of Southern Guinea Savanna of Kaduna State cannot be over emphasized. Majority of the people in rural and urban areas of the local government areas still rely on herbal medicine for their health care. It is recommended that agroforestry practices should be encouraged in the local government areas and it should be ensured that watermelon fruits be one of the agricultural crops to be incorporated into the system for sustainability of the fruits and widespread of the medicinal utilization of the seeds and fruits. Further research should also be conducted on other multipurpose uses of the fruit and seeds of the plant.

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