



Medicinal Utilization of *Hydrocotyle asiatica* Linn. in Kaduna North Local Government Area of Kaduna State, Nigeria

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Authors' contributions

This work was carried out in collaboration among all authors. Author AIS designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors JA and MBU managed the analyses of the study. Authors RAS and GLL managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Hydrocotyl asiatica (L.) is commonly used as a medicinal herb in Ayurvedic medicine, traditional African medicine, and traditional Chinese medicine. However, little is known about its medicinal use in Nigeria. Thus, a multistage sampling technique was adopted in selecting 10 marketers and 40 herbal practitioners. Questionnaires were purposively administered to key informants in the Kaduna North Local Government Area of Kaduna State, Nigeria. However, only 45 were retrieved in the end. The questionnaire focused on demographic information of respondents, ailment treated, preparation and administration protocols. Results revealed various diseases are treated with *H. asiatica*, which include: headache, cough scurvy and mouth sore, fibroid, menstrual pain, waist

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pain, back ache, weak libido, sexually transmitted infections, hypertension, amongst others. This herbaceous species can be used alone or mix with other herbs such as *Pipper guineensis*, *Ocimum grandiflorum*, *Allium cepa*, amongst other. Standardization of measurement in the use of *H. asiatica* is through the use of table and tea spoons. However, it is recommended that adequate storage facilities should be provided to check excessive dryness of the kola and pest infestation during storage. Also, the sustainability of biodiversity and biological resources of the species and other important medicinal plants should be ensured so that individual plants do not go into extinction.

Keywords: Medicinal; wonderful kola; utilization; Kaduna North; herbal practitioners.

1. INTRODUCTION

Hydrocotyle asiatica (L.), commonly known as wonderful kola nut, is a small herbaceous plant of the family Apiaceae. It grows in India, Sri Lanka, northern Australia, Indonesia, Iran, Malaysia, Philippines and Africa. In Nigeria, it is commonly found in Yoruba land. *H. asiatica* cleanses blood and strengthens nervous system. The species is also, very rich in vitamin K. [1]. Water extract of *Hydrocotyle asiatica* excreted anti-inflammatory and anti-filarial effect and used as memory enhancer and facilitate excellent learning ability. Clinical trials have also shown that it can help those with chronic venous insufficiency [2]. *Hydrocotyle asiatica* grows in shady moist or marshy area. Interestingly, wonderful kola nut has a long history of use in both Chinese and Ayurvedic medicine for conditions such as poor circulation [1]. It has also been proved in Africa that wonderful kola nut has the ability to stop migraine headache when sliced and placed on the fore head for about ten minute [1]. Part of the plant used for medicine that has the highest concentration of the active constituents are found in the aerial part of the plant, however the leaves, seeds, nuts and roots are also used [3,4].

Wonderful kola nut is regarded as one of the most and rejuvenating herbs in Ayurveda and is used to cure / treat ailment [1]. Wonderful kola nut is normally used for the treatment of so many diseases such as cough, chest pain, waist pain, irregular menstruation, pile, quick ejaculation, headache, hypertension, dysentery, premature aging and blood cleansing [5]. However, its economic significance has reached an alarming rate in pharmaceutical industries in production of drugs that cure, control and improved blood circulation, strengthens veins and capillaries, purifies blood, eczema, epilepsy, hypochondria, hair losses, immune system boosting, skin condition, convulsion, elephantiasis, psoriasis and so on [6,7].

Wonderful kola nut is a very important medicinal plant that can be used for prevention and treatment of various diseases when combined with appropriate plants species. However, much work has been done about the whole plant in Asiatic and North Americans regions, but little research has been carried out about the nut [1]. In Nigeria, little of its medicinal knowledge has been documented. Herbalist and herb traders who have the knowledge of the medicinal uses of the nut learnt it by heart. Therefore, this research was aimed at documenting the medicinal utilization of wonderful kola nut as well as its economic significance in Kaduna North Local Government Area of Kaduna State.

2. MATERIALS AND METHODS

2.1 Study Area

This study was conducted in Kaduna North Local Government Area of Kaduna State, located between latitude 9°N and 12°N and longitude 6°E and 9°E [8]. The vegetation of the local government area is Guinea Savannah. The study area forms a major component of the agricultural economy of the State and it is located in the northern part of the State. Farming and livestock are their main occupation [9]. The local government area covers an area of about 445.650 km², with a projected population of 368,250 000 thousand people [10].

2.2 Data Collection and Source

Primary data was used for this study. The primary data was collected on 11th of November, 2015 by using structural questionnaires. The questionnaire was designed to collect information on the demographic characteristics of respondents such as age, sex and education. It further endeavored to solicit information on disease *Hydrocotyle asiatica* can cure, mode of preparation and administration in the study area.

2.3 Sampling Procedure

Multi-stage sampling technique was used in data collection such that 50 questionnaires were stratified, randomly administered to the vendors and practitioners (vendors (10), herbalists (15), herb sellers (10), traditional healers (15) within the local government area. The administering of the market questionnaires was restricted to the vendors in the central market because the pre-survey shows that the majority of the marketers are concentrated in this market. The herbalist, herb sellers and traditional healers were randomly selected within the study area. The questionnaire was designed in English language and administered by group of interviewers who could speak and write in local dialects. Face-to-face method of interviews was adopted.

2.4 Analytical Technique

Simple descriptive statistic was employed to have a summary description of data.

3. RESULTS AND DISCUSSION

3.1 Demographic Characteristics of Sampled Respondents

Table 1 revealed that majority of the sampled respondents are male (55.56%) while 44.44% are female. The age brackets of 31-40 years constitute the largest (44.44%) of the respondents followed by 41-50 years (24.45%) while 10-20 years age brackets are the least (2.22%). This implies that majority of users of the species are at their middle age who can actively involved in collection of the nut, mode of preparation and administration for medicinal uses. 46.67% are married, 28.89% are single, 13.33% are widower while 11.11% are divorces. This revealed that most of the respondents who make use of *H. asiatica* in curing and prevention of diseases in both the children and the adult are family people. Furthermore, the table further shows the educational status of the respondents in which majority of the respondents (28.89%) had secondary education while (26.67%) had tertiary education, (22.22%) had primary

Table 1. Demographic characteristics of sampled respondents (herbalist, herb sellers, traditional healers, marketers)

S/No	Variable	Frequency	Percentage
1.	Age (Years)		
	10-20	01	2.22
	21-30	03	6.67
	31-40	20	44.44
	41-50	11	24.45
	51-above	10	22.22
2.	Marital Status		
	Married	21	46.67
	Single	13	28.89
	Divorce	05	11.11
	Widow(er)	06	13.33
3.	Gender		
	Male	25	55.56
	Female	20	44.44
4.	Occupation		
	Traditional Healers	10	22.22
	Herb Sellers	20	44.44
	Civil Servants	08	17.78
	Others	07	15.56
5.	Education		
	Primary School	10	22.22
	Secondary School	13	28.89
	Tertiary School	12	26.67
	Quranic School	08	17.78
	No formal education	02	4.44
	Total	45	100.00

Table 2. Disease cured by wonderful kola and mode of preparation and administration

S/No	Disease	Preparation	Administration
1.	Headache	Cut or slice little of the kola	Chew it or place the little sliced kola on your forehead or you combine the two for at least 10 minutes.
2.	Stomachache	cut two wonderful kola into pieces add one bottle of 7up soft drink into the cut pieces; allow it to stay for 3 days	Two tablespoons when you have stomachache
3.	Cough	Cut two wonderful kola into pieces add one bottle of 7up soft drink into the bottle cut pieces, allow it to stay for 3 days	One tablespoon three (3) times daily.
4.	Scurvy	Slice little clean wonderful kola	Chew the kola about four (4) times a day for one week.
5.	Pile or protrusion of anus	Cut wonderful kola into small pieces, insert them into clean bottle then add bottle of soft drink e.g. 7up, mountain dew etc. allow it to stay for 4 days. Or grind few pieces of the kola with <i>pipper guineensis</i> and mix with shea butter	Take two (2) teaspoons at night every day. Use it to rub the protruding anus with it for 30days at night before going to bed.
6.	Menstrual pain	Cut the kola into pieces add few combine soft drink allow it to stay for 2 days	Take two (2) tablespoons morning and night during menstruation.
7.	Malaria or typhoid	Mix few wonderful kola with sugar, bitter cola, one bottle of <i>Allium cepa</i> or Soda water or 7up, allow them to ferment for one day	Take two (2) tablespoons for adult, one (1) tablespoon for children above three (3) years, three (3) times daily for 5 days.
8.	Waist pain and backache	Get few wonderful kola, scrape the outer coat and then cut the kola into smaller pieces then pour into a bottle mix with soda water and add Naphthalene. Allow it to stay for 3-4 days	Two (2) tablespoons for one week.
9.	Fibroid	Cut few pieces of wonderful kola, pour into a big bottle and fill it with <i>citrus spp</i> juice, allow it to stay for week 2-3 days	Take two (2) tablespoons morning and night for (2) for two weeks.
10.	Diabetes	Cut few wonderful kola into pieces into two (2) litres gallon of soda water	Take 2 tablespoons three times daily for about (3) weeks.
11.	Cholera	Cut few wonderful kola cut into pieces, pour into a big bottle mix with 15ml of lime juice and 15ml of scent leave juice, then allow to stay for one day	Take 2 tablespoons for adult and 1 tablespoon for children at interval of 2 to 3 hours until the symptoms stop.

S/No	Disease	Preparation	Administration
12.	Weak libido / weak erection of man organ	Get three (3) <i>Allium cepa</i> boil it and squeeze out the juice, filter it and mix with same quantity of honey, stir it together and boil it. The moment it reaches boiling point, remove it. Then add one big grinded wonderful kola to the mixture and pour it in a bottle	Take one tablespoon after each meal (3 times daily).
13.	Hypertension	Grind few pieces of wonderful kola with <i>pipper guineensis</i> add 25mls of pure honey	Take two (2) tablespoons morning and night.
14.	Rheumatism and Arthritis (joint pain)	Cut few pieces of wonderful kola, few <i>Garcinia kola</i> and few sugar and mix with well blended one roll of alligator pepper, little quantity of leaves and <i>ocimum grandiforum</i> leaves. Then mix all with soda water in a clean bottle. Allow it to stay for 2 -3 days. OR Grind few pieces of wonderful kola and <i>pipper guineensis</i> mix with about 25mls of pure honey depending on the quantity of the cola and the <i>pipper guineensis</i>	Two (2) tablespoons morning and night.
15.	Sexual transmitted diseases (STI) e.g. Gonorrhoea etc.	Cut / slice few pieces of wonderful kola, add little potash about five (5) ampicillin capsules. Then add about 25-30mls of soda water drink, let it stay for 20days	Two (2) tablespoons morning and night for 5-7 days. Two (2) tablespoons morning and night for 5-7 days.
16.	Migraine or serious headache	Slice one wonderful kola, grind it	Apply little of it on the forehead in less than 4-5 minutes the headache will stop.



Plate 1. Sample of wonderful kola (*Hydrocotyle asiatica*)

education, 17.78% had Quranic education and lastly 4.44 had no formal education. This indicates that majority of the respondents are literate, they know how to read and write. They can easily learn different methods of preparation and administration of the plants.

3.2 Disease Cured by Wonderful Kola and Mode of Preparation and Administration

Table 2 below revealed the various diseases cured by wonderful kola, preparation and administration in Kaduna North Local Government area of Kaduna State. However, most of the practitioners learnt and inherited the practices from their fore fathers; therefore, they were very, very reluctant in disclosing some of these preparation and administration. The observation is in consonance with the findings of [3,4]. Sometimes, the wonderful kola was used singly but in some cases it was combined with other herbs for the treatment and prevention of some of these diseases. These diseases include cough, scurvy and mouth sore, hypertension, menstrual pains, rheumatism, sexual transmitted diseases (STD) and so on. This is in agreement with the works of [3,11] who observed that medicinal plants work best when combined with the right species. The table further revealed that there is standardization of measurement in taking

the herb with the use of table spoons and teaspoons. This observation is also in accordance with the work of [12].

4. CONCLUSION

The study shows that wonderful kola (*Hydrocotyle asiatica*) can be used in the treatment and prevention of chronic / acute diseases. The species addressed an important health care need. Thus, its integration with conventional medicine should be promulgated.

5. RECOMMENDATION

- i. Research institute in collaboration with three arms of government should carry out further research into traditional medicine and other multipurpose uses of the Kola.
- ii. Sustainability of biodiversity and biological resources of the kola and other medicinal plants should be ensured so that individual plants do not go into extinction.
- iii. The Federal Ministry of Health should identify and encourage the traditional healers and herbs trader who are knowledgeable about the medicinal utilization of the kola at various local levels to develop their recipes and give incentives to motivate them.

- iv. Adequate storage facilities should be provided to check excessive dryness of the kola and pest infestation during storage.

CONSENT

As per international standard, respondents' written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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