
GC-MS ANALYSIS OF THE ACETONE EXTRACT OF *BUCCHOLZIA CORIACEA* FRUIT

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ABSTRACT

The fruits of *Buccholzia coriacea* were analyzed using GC-MS. The result of the Analysis Identified ten compounds which includes 2,4,-Decadienal (0.5%), 2-[2-propenyloxy] quinoline (1.90%), 2-[tert-Butoxy carbonyl] Benzoic acid (1.4%), Hexadecanoic acid (18.4%), Nonadecanol (7.5%), 2-methyl – 3,13-octadecadienol (9.0%), 2, 3-dihydroxypropyl hexadecanoate (5.7%) and 6,9, - pentadecadien – ol (10.4%). These compounds may be responsible for the medicinal properties exhibited by this plant.

INTRODUCTION

Plants are primary source of medicine, fibre, food shelters and other items in everyday use by humans with roots, stems, leaves, flowers, fruits and seeds providing food for human. Plants serve as an indispensable constituent of human diet supplying the body with mineral salts, vitamins and certain hormones precursors, in addition to protein and energy. Seeds have nutritive and colorific values which make them necessary in diet (Odoemelam, 2005). Among these plants seeds are the seeds of *Buccholzia coriacea* popularly known as “wonderful kola”.

Buccholzia coriacea is a perennial plant which grows as a tree. It belongs to the family capparaceae and its local name includes “uworo in Yoruba, “owi” in Edo, “esson bossi” in Central Africa, “uke” in Igbo (Rhode, 2007). The parts of the plants commonly eaten are the seeds which are either cooked or eaten raw.

Wonderful kola is known as memory nut because it enhances the memory. It acts as the cleanser of the blood, facilitates learning ability and strengthens the nervous system, and also effective in the treatment of menstrual problems and hypercholesterolemia. It is also useful in the treatment of hypertension and also prevents pre-mature aging. It has also been proved in Africa that wonderful kola has the ability to stop migraine/headache when applied on the fore head for ten minutes (Etukudo, 2004).

Pre-treatment of *Buccholzia coriacea* seeds such as boiling could be beneficial before it is consumed by either humans or animals.

MATERIAL AND METHODS

Sample Collection and Preparation

Buccholzia coriacea was bought from Urueto market in Ikot Ekpene Local Government Area of Akwa Ibom State. The fruit were washed with distilled water, air dried and cut into small pieces and sun dried for 15 days. The fruits was dried into powder form and stored in airtight container for analysis.

GC-MS Analysis

GC-MS analysis of acetone extract of *Buccholzia coriacea* was conducted using GC-MS QP (2010) plus, Shimadzu, Japan Series. The extract was obtained by dissolving 1g of sample in 50ml acetone soaked for 24 hours and filtered. The injection temperature and detector temperature were fixed at 25⁰C. Helium was used as the carrier gas at a flow rate 6.2ml/min. The oven temperature was programmed at 60⁰C (held for 1 minute) from 60 to 100⁰C at 10⁰C/min and from 100 to 300⁰C at 5⁰C/min (held for 35minutes). Injection was made in split less mode. Compound identification was

accomplished by comparison of mass spectra and gas chromatographic retention times of the extracted materials to that of the main standards which were stored in the National Institute for chemical Technology, Zaria (NARICT) reference library.

RESULT AND DISCUSSION

The results of the GC-MS analysis of *Buccholzia coriacea* are shown in Table 1.0 below.

Table 1.0 GC-MS Analysis result of acetone extract of *Buccholzia coriacea*.

Peaks	Compound name	Compound formulae	Molecular weight	Retention time	Percentage (%) content
1.	2,4 Decadienal	C ₁₀ H ₁₆ O	152	8.608	0.5
2.	2-(2-Propenyloxy) quinoline	C ₁₂ H ₁₁ O	185	15.108	1.9
3.	2-(tert-Butoxycarbonyl) benzoic acid	C ₁₂ H ₁₄ O ₄	222	15.833	1.4
4.	Hexadecanoic acid	C ₁₆ H ₃₂ O ₂	256	18.000	16.0
5.	9, 12-octadecadienol chloride	C ₁₈ H ₃₁ O ₁₀	298	20.908	29.2
6.	Octadecanoic acid	C ₁₈ H ₃₆ O ₂	284	21.158	18.4
7.	Nonadecanol	C ₁₉ H ₄₀ O	284	22.475	7.5
8.	2-methyl-3,13-octadecadienol	C ₁₉ H ₃₆ O	280	24.292	9.0
9.	2,3-dihydroxypropyl hexadecanoate	C ₁₉ H ₃₈ O ₄	330	24.633	5.7
10.	6,9-pentadecadien -1-ol	C ₁₅ H ₂₈ O	224	26.358	10.4

DISCUSSION

The fruits of *Buccholzia coriacea* were analyzed using GC-MS and ten compounds were identified. 65% of the compounds were acids which includes 2-(tert-Butoxycarbonyl) benzoic acid (1.4%), Hexadecanoic acid (16.0%), 9,12-octadecadienol chloride (19.2%) and octadecanoic acid (18.4%). It was followed by Esters which includes 2,3-dihydroxypropyl hexadecanoate (5.7%). Alcohol had 27% content which include Nonadecanol (7.5%), 2-methyl-3, 13-octadecadienol (9.0%), and 6,9-pentadecadien -1-ol (10.4%). Ether compound present is 2-(2-propenyloxy) quinoline (1.9%). 0.5% of the compound is aldehyde (2,4-Decadienal).

Carboxylic acids content in the seeds of *Buccholzia coriacea* helps in the medication for the treatment of skin inflammation.

Alcohols or phenols enable the seeds to be used in the treatment of body pain when mixed other herbs and it also warms the body and alleviates joint pains.

The aldehydes or ketones in the seeds of *Buccholzia coriacea* helps the seeds to show antimicrobial activity, hence employed in the treatment of malaria, fever, ringworm, scabies, gonorrhea and dysentery. It also enables the seeds to be useful in treating High Blood pressure (Rhode, *et al.*, 2007).

The presence of amines allows *Buccholzia coriacea* fruits to be used as an excellent cough cure and also acts as bronchodilator expanding the bronchial air passage.

The alkanes present in the seeds of *Buccholzia coriacea* prevent the loss of important minerals by the rain, and also prevent against bacteria, fungi and harmful insect and also help the seeds to display microbial activity against selected pathogens (Akubugwo, 2007).

The aromatic compound present in the fruits of *Buccholzia coriacea* gives the fruits its natural colour and helps it to act as a principal precursor of vitamin A.

CONCLUSION AND RECOMMENDATION

In conclusion, the result obtained in this research shows that fruits of *Buccholia coriacea* possesses different compounds which include 2,4 Decadienal (0.5%) 2-(2-Propenyloxy) quinoline (1.9%) 2-(tert-Butoxycarbonyl) benzoic acid (1.4%), Hexadecanoic acid (16.0%), 9,12-octadecadienol chloride (29.2%), Nonadecanol (7.5%), 2-methyl-3, 13-octadecadienol (9.0%), 2,3-dihydroxypropyl hexadecanoate (5.7%) and 6,9-pentadecadien -1-ol (10.4%). These compounds present in the seeds of *Buccholia coriacea* support its use as medicinal plant and antimicrobial agent.

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