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GC-MS ANALYSIS OF *BUCCHOLZIA CORIACEA* ENGLE

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ABSTRACT

Buccholzia coriacea Engle commonly referred to as Musk tree is native to the lowlands and rainforests. In this study, the composition of the hexane extract of the seed of *B. coriacea* was analyzed by GC-MS. Forty (40) different compounds were identified and they are mainly the hydrocarbons, sesquiterpenes and fatty acids. The retention times and peak areas of the identified constituents are presented in a table. The five main constituents identified were octadecane, 3-Eicosene, Hexadecane, Heptadecane and Octadecane.

Keywords: *Buccholzia coriacea,* GC-MS, Fatty acids and hydrocarbons

INTRODUCTION

Buccholzia coriacea Engler is one of the thirty six species of the Capparidaceae family **[1]**. It is a tree which grows to about 20m, it is commonly known as the musk tree or wonderful cola **[2]** and is found mainly in Guinea, Cameroon and Gabon **[3]**.

In folklore medicine, the seed is used for the treatment of fever, Diabetes mellitus, hypertension, rheumatism, cough, catarrh **[4]** and as an anthelmintic agent **[3]**.

Several studies have reported the antidiabetic **[4]**; antitrypanosomal **[5]**; anthelmintic **[6-8]**; antimicrobial **[9-10]** and larvicidal activities **[11]** of *B. coriacea*.

The aim of this study was to investigate the composition of the hexane extract of the seed of *B. coriacea* by GC-MS.

MATERIALS AND METHODS

Plant Collection

Fresh seeds of *B. coriacea* were purchased from the farm settlement at Ikenne- Remo, Ogun State. Nigeria. The plant was authenticated at the Department of Pharmacognosy, Olabisi Onabanjo University, Sagamu, Ogun State, Nigeria.

Extraction

Finely chopped fresh seeds of *B. coriacea* was macerated with n-hexane for three days with occasional shaking and filtered. The filtrate was concentrated under reduced pressure.

GC/MS Analysis

The Gas chromatography–Mass spectroscopy was carried out at the University of Lagos, Idi-Akoka, Lagos by using an Agilent 7890A Gas Chromatography linked to Agilent Technology 5975C VLMSD Mass Spectrophotometer. Helium was used as the carrier gas at a flow rate of 1ml/min. The temperature was programmed at 80^{o}C for 5 min then increased to 250^{o}C at the rate of 15^{o}C/min. respectively. The plant extract of was injected with an Agilent technology 7683B injector.

RESULTS AND DISCUSSION

Forty (40) constituents were identified in the hexane extract of *B. coriacea*. The identification of these constituents was made by the direct comparison of their retention times (RT) and mass spectra fragmentation with those in the library and the published literatures.

The components in the hexane extract of *Buccholzia coriacea* are presented in **Table 1** showing their Retention Times and Peak areas. In total, 40 constituents were identified and the major constituents present are octadecane, 3-Eicosene, Hexadecane, Heptadecane and octadecane.

Previous phytochemical analysis have reported the presence of alkaloids, saponins, cardiac glycosides and flavone glycosides **[4]**; saponins, anthraquinones, alkaloids, cyanogenetic glycosides **[8]**; tannins and cardiac glycosides **[12]** in the seed of *B. coriacea*. The identified compounds in this study from the seeds of *B. coriacea* were mainly hydrocarbons, sesquiterpenes and included both the saturated and unsaturated fatty acids. **[13]** reported that the mixtures of heptadecanes, tetradecanes and eicosenes as identified in this study, have been reported to exhibit strong antimicrobial activity.

In addition, the presence of terpenes in plants is believed to exert physiological functions such as chemical defense against certain pathogens causing human and animal disease **[14]**. While other studies have suggested that the existence of secondary plant metabolites and Fatty Acid Methyl (FAME) could have synergistic effects which could be responsible for the reported biological activities and pharmacological properties of plants. Apart from the possible health benefits of the identified compounds in the seed of *B. coriacea*, these compounds could also be useful as constituents or raw materials in several industries.

Table 1: GC/MS constituents of *B. coriaceae* hexane extract

Retention Time	COMPOUND	AREA%
9.862	2-Cyclohexen-1-one, 3,5,5 – trimethyl	1.10
11.538	Dodecane	1.19
13.524	Benzene, Pentamethyl	0.5
13.753	Tridecane	1.00
13.896	Naphthalene, 2-methyl	1.55
15.195	Nonane	0.73
15.704	Tridecane, 6-methyl	0.73
16.053	Naphthalene, 2,6-dimethyl	2.60
16.579	1-Eicosanol	0.42
16.768	Undecane	1.68
16.968	Naphthalene, 1,6-dimethyl	0.55
17.466	Tridecane,6-methyl	3.12
17.563	Oxalic acid	0.48
17.844	Naphthalene, 2,3,6-trimethyl	0.60
18.267	Azulene, 4,6,8 –trimethyl	2.03
18.502	1 – Octadecanesulphonyl chloride	0.64
19.126	Hexadecane	5.47
19.200	Oxalic acid, Cyclobutyl octadecyl ester	0.66
19.366	Cyclohexane, 1,2,4,5-tetraethyl	0.54
19.818	Pentadecane 2,6,10 –trimethyl	2.19
20.012	Cyclotetradecane	0.78
20.138	Tetradecane, 1-chloro	0.49
20.659	Heptadecane	4.10
20.722	Heptadecane,2,6-dimethyl	2.61
21.111	2 – Hexadecanol	0.49
21.214	Tetradecane	2.08
21.500	Cyclohexadecane	1.86
22.101	Octadecane	6.88
22.204	Hexadecane, 2,6,10,14 –tetramethyl	2.66
22.513	3-Methyl-2-(3 – methylpentyl) – 3-buten-1-ol	0.57
22.616	Hexadecane, 1-chloro	0.97

22.799	**Tetratriacontyl Pentafluoro propionate**	**0.58**
22.999	**Cyclododecanol, 1-ethenyl**	**0.59**
23.423	**Nonadecane**	**4.05**
23.915	**2 – Piperidinone, N-(4-bromo-n-butyl)**	**1.37**
24.292	**10-Methyl-9-nonadecene**	**1.63**
24.739	**Octadecane**	**14.22**
24.928	**5-Eicosene**	**0.77**
25.923	**Heneicosane**	**2.77**
27.005	**3-Eicosene**	**10.28**
27.108	**Nonadecane, 1-chloro**	**3.58**
28.304	**Octadecane**	**0.71**
29.694	**Tetracosane**	**1.08**

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