

**The Chemical Composition of Flower Lipids of *Cordia Sebestina*****Adeosun, C.O and Sojinu, O. Samuel***Department of Chemical Sciences, College of Natural Sciences, Redeemer's University, Nigeria.*Adeosun, C.O and Sojinu, O. Samuel; The Chemical Composition of Flower Lipids of *Cordia Sebestina***ABSTRACT**

*Cordia sebestina* also known as Geiger Tree is a plant that is rarely found in Africa especially Nigeria. The phytochemical investigation showed that the flower contains robust phytochemicals. Gas-Chromatography-Mass Spectrometry(GC-MS) analysis of the ethylacetate extract revealed the presence of fumaric acid, Isobutyl undec – 2 – en – 1 – y lester (15%), 1, 4 – dioxaspiro [4,5] decan – 8 – one (13%), 1- ethyl - 3- pyrrolidinol (6%), hentriacontane (5%), 3 – n – propyl - 2, 4 – pentanedione (4%), tricosane (4%), butylated hydroxytoluene (4%),  $\alpha$  – amyryn (2%), n-hexadecanoic acid (2%),  $\alpha$ -tocopherol (0.2%) among others.

**Key words:** *Cordia Sebestena*, GC-MS, phytochemicals.**Introduction**

*Cordia sebestena* in the Boraginaceae family is also known as Geiger tree is a moderate growing flowering tree that produces tight clusters of bright orange flowers with a dense rounded evergreen canopy with small white pear-shaped fruit found in the premises of the Redemption Camp, Mowe, Ogun State in the South western part of Nigeria.

Archaeological studies have indicated that the plant is indigenous to the Islands [1]. Irrespective of its origin, the plants is known to have a long history of use. In the Hawaiian Culture, the syrup of the bark, flowers or fruit is taken for coughs and bronchial ailments. Teas made from the flowers are used to treat venerable diseases [2].

The large dark green leaves were used to dye Kappa or wood cloth that was used for both clothing and bedding. Despite all these known uses of the plant; *Cordia sebestena's* phytochemical and pharmacological surveys have not been scientifically reported. For sometime now, interest has been greatly shown in the chemical composition of some Nigerian medical plants by phytochemist, biochemist and chemist. As part of the phytoproject to examine the chemical constituents of the various parts of plants found in Nigeria, this study was conducted to determine the chemical compositions of the flowers of *Cordia sebestena*.

**Materials and Methods***Plant Materials:*

5g of the powdered samples were soxhlet extracted with ethylacetate for a minimum of 48 hours. After evaporation of the solvent under vacuum, a yellow solid was obtained and then analysed by Gas Chromatography Mass Spectrometry(GC-MS).

The GC-MS analysis was carried out on a GC Agilent Technologies 7890A system having a gas Chromatograph Interfaced with a Mass Spectrometer on an HP-5MS column(30 m x 0.32 mm i.d; 0.25 $\mu$ m film thickness) using ultra-pure helium gas as carrier gas. The sample extracts were injected with an auto sampler in the splitless mode. The Column temperature was initially set at 60°C ramped to 300°C at 8°C/min.

*Compounds Identification:*

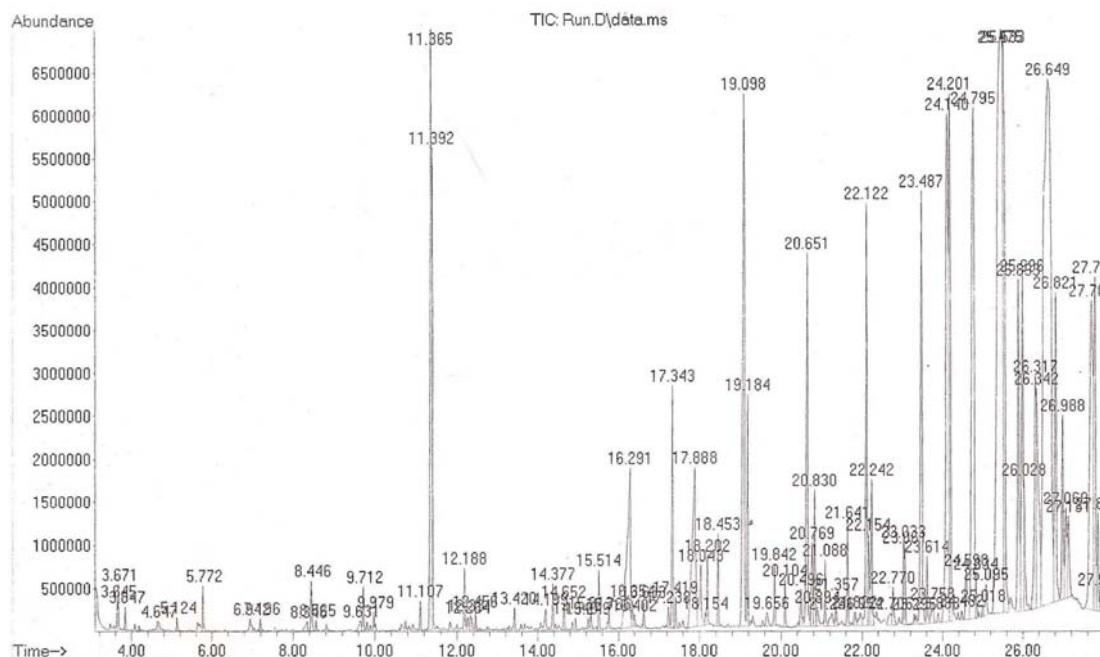
Compounds were identified by comparing the robust 2008 database of the National Institute of Standard and Technology (NIST) with that of the spectrals of the detected compounds in the sample extract.

**Results and Discussion**

The total ion chromatogram (TIC) of the flower extract is shown in fig 1. The extract contained aliphatic lipids (e.g *n*-alkanes, *n*-alkanols, *n*-alkanoic acids) triperpenoids etc. as depicted in table 1.

**Corresponding Author**

Adeosun, C.O., Department of Chemical Sciences, College of Natural Sciences, Redeemer's University, Nigeria.  
E-mail: adeosuncharles@yahoo.co.uk, Tel:+234 803069024



**Fig. 1:** The total Ion Chromatogram of the n-hexane leaf extract.

**Table 1:** Chemical Components of the flower extract of *Cordia sebestena*.

Compound Name	
Butylated hydroxytoluene	3.635
phenol, 2,4-bis(1,1-dimethylethyl)	1.419
n-hexadecanoic acid (C <sub>16</sub> H <sub>32</sub> O <sub>2</sub> )	2.086
heneicosane(C <sub>21</sub> H <sub>44</sub> )	1.031
octadecanoic acid(C <sub>18</sub> H <sub>36</sub> O <sub>2</sub> )	2.107
tricosane(C <sub>23</sub> H <sub>48</sub> )	4.002
2-nonadecanone(C <sub>19</sub> H <sub>38</sub> O)	0.807
Octadecane	2.307
Nonacosane	2.924
1-ethyl-3-pyrrolidinol	5.572
3,5-heptanedione	3.036
Hentriacontane	5.305
1,4-dioxaspiro[4,5]decan-8-one(C <sub>8</sub> H <sub>12</sub> O <sub>3</sub> )	13.149
4,8,12,16-tetramethylheptadecan-4-olide	4.122
13-methyl-z-14-nonacosene	2.182
Nonacosane	2.163
4,4,6a,6b,8a,11,11,14b-octaamethyl-1,4,4a,5,6,6a,6b,7,8,8a,9,10,11,12,12a,14,14a,14b-octadecahydro-2H-picen-3-one	1.514
4,4,6a,6b,8a,11,11,14b-octaamethyl-1,4,4a,5,6,6a,6b,7,8,8a,9,10,11,12,12a,14,14a,14b-octadecahydro-2H-picen-3-one	2.159
fumaric acid, isobutyl undec-2-en-1-yl ester	15.129
$\alpha$ -Amyrin	2.032
17-pentatriacontene	0.999
3-n-propyl-2,4-pentanedione	4.134
3,7-decadiene-5,6-diol	2.256
Stigmasl-4-en-3-one	0.700
3-tetradecane	0.713
2-tridecanone	0.119
diethyl phthalate	0.062
Tetradecanoic acid	0.137
2-heptadecanone	0.214
1-docosane	0.050
Hexacosane	0.142
Squalence	0.334
26-nor-5-cholestene- $\beta$ -ol-25-one	0.054
$\alpha$ -tocopherol	0.234

*Compounds Occurrence and Distribution:*

One of the most abundant lipid molecules biosynthesised by terrestrial plants and are usually characterized by odd over even carbon number predominance in the C25 to C33 carbon number range [3]. Kumaresan and his co-workers in 2011 also identified n-hexadecanoic and octadecanoic acids in the ethanolic extract of the flower of *Cordia sebestina* [4]. They identified four main compounds, as the most prominent with relatively high percentage abundance. They included Butane, 1,1-diethoxyl-3-methyl-(35.11%), n-hexadecanoic acid(30.22%), 1,2-Benzenedicarboxylic acid, di-isooctyl ester (21.78%) and oleic acid (12.89%). However a different distribution profiles is observed in this study. A relative even abundance is noted among the various components with the highest abundance recorded in fumaric acid, isobutyl decan-2-en-1-yl ester (15.13%), 1,4-dioxaspiro[4,5] decan-8-one (13.15%), 1-ethyl-3-pyrrolidinol (5.57%) and Hentriacotane (5.3%) (Table 1).  $\alpha$ -amyrin is the only detected Terpenoid in the extract. A number of n-alkanone were detected in the extract (Table 1).

*Cordia sebestina:*

Obviously has a robust chemical composition which tend to support its use as a herbal remedy.

**References**

1. Burney, D.A., 2001. Fossil evidence for diverse biota from kaula and its transformation since human arrival. Ecol. Monogr, 71: 615-641.
2. Krauss, B.H., 1993. Plants in Hawaiian culture. First ed., University of Hawaii Press, Honolulu.
3. Sonibare, O.O. and O.S. Sojini, 2009. Chemical composition of leaf lipids of Angiosperms: Origin of land plant derived Hydrocarbons in sediments and fossils fuels. International Journal of European Research, 25(2): 192-199.
4. Kumaresan, M., P.N. Palanisamy and P.E. Kumar, 2011. Gas Chromatography - Mass Spectrometry analysis of flower of *Cordia sebestina*. International Journal of Chemical Research, 2011. 01(04): 25-28.