

## ISOLATED AND IDENTIFIED A CHEMICAL COMPOSITION OF THE LEAVES EXTRACT OF *WARIONIA SAHARAE* FROM ALGERIAN WESTERN SOUTH

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### Abstract

The essential oil of *Warionia saharae* Benth & Coss., was obtained by hydrodistillation. This has been extracted and the six main components have been chromatographically purified by TLC and GLC and identified GC-FID and IR analysis, resulting in the isolation and identification of five several new compounds such -Eudesmol, 1-Tricosane, 3-Methyltricosane, Heneicosanoic acid and Hexacosane, witch include the major compounds of essential oil of *Warionia saharae*. This has been ex- tracted and the three main components have been chromatographically purified by TLC and GLC and identified as Eudesmol, Linalool and Nerolidol.

**Key words:** *Warionia saharae*, essential oil, Silica gel column chromatography, GC-*IK*, IR.

### Introduction

*Warionia* Benth & Coss. Is a monotypic genus of asteraceae[1, 2], endemic to the northwestern edge of the African Sahara desert [1, 3]. The species *Warionia saharae* Benth & Coss., known by the vernacular name of " Afessas"[1, 4], or " Kabar lem'aiz"[4], "Abessas"[5] and " afezded" in some Moroccan region. The Berber name is "Tazart n-îfiss"[6].

This is a thistle-like aromatic plant, of 1 to 3 m of height, with white latex and fleshy, pinnately-partite leaves [1, 3]

Pervious, chemical composition of *Warionia saharae* essential oils from the leaves was reported for the first time by Ramaut et al[07], the researcher have isolated and identified only three (3) major constituents; Eudesmol (42,25%), Nerolidol (17,26%) and Linalool (8,63%).

Recently, several studies have been carried out on the phytochemical studies and floristic treatment [15, 16].Our work consists with the fractionate method of the essential oil extracted from *Warionia saharae*, for objectif to isolate the major constituents by the classic chromathography methods.

### Materials and methods

#### Plant material

The leaves of *Warionia saharae* were collected from Bechar (south west Algeria) in 2011. The plant material was identified according to the A.N.N (National Agency Nature protection- Bechar, Algérie)[08, 09]. Voucher specimen is kept in the herbarium of POSL (Phytochemical and Organic Synthesis laboratory) laboratory, faculty of sciences university of Bechar, Algeria under N=° 02/07[08].

#### Extraction and isolation

The leaves samples were air-dried and hydrodistilled. The obtained extract essential oil extracted was analyzed by TLC and fractionated on the silica gel column. The Column chromatography was performed over silica gel 10cm (size L=40cm, R=2cm), eluted with a gradient of Benzene : ethyl acetate (9 :1), obtained by combining the eluates on the basis of TLC analysis. The recovered fraction are analysed by gas chromatography GC-FID, identified by comparison of their retention indices with those published in the literature and confirmed by IR spectroscopy.

#### Oil analysis

The analysis of the essential oil fraction was carried out by GC-FID on SHIMADZU gas chromatograph using the retention indices obtained by injection of the homologous hydrocarbons series C<sub>6</sub>-C<sub>44</sub> in the same conditions, and infrared spectrum IR was carried out using a AVATAR 320 FFIR, thermo Nicolet apparatus.

A SHIMADZU GC-2014 gas chromatograph equipped with a FID, and a DB-5 capillary column (30 m× 0,32mm i.d., film thickness 0,25µm) was used. Carrier gas, N<sub>2</sub>, oven temperature programmed at 50°C for 3min, rising at 3°C/min to 140 and 240°C at 100°/min. Injection and detector temperatures, 220°C and 240°C, respectively.

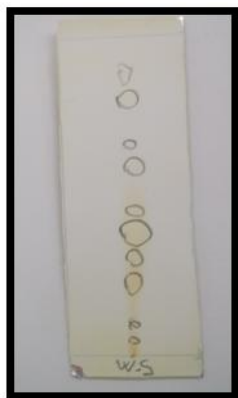
The injected volume was 1µl, using split injection ratio of 1.0.

### Results and discussion

The essential oil of *Warionia saharae*, was extracted by hydrodistillation appearing as light yellow color, viscous liquid with a percentage yield of 0.5% (w/w), characterized by a strong odour.

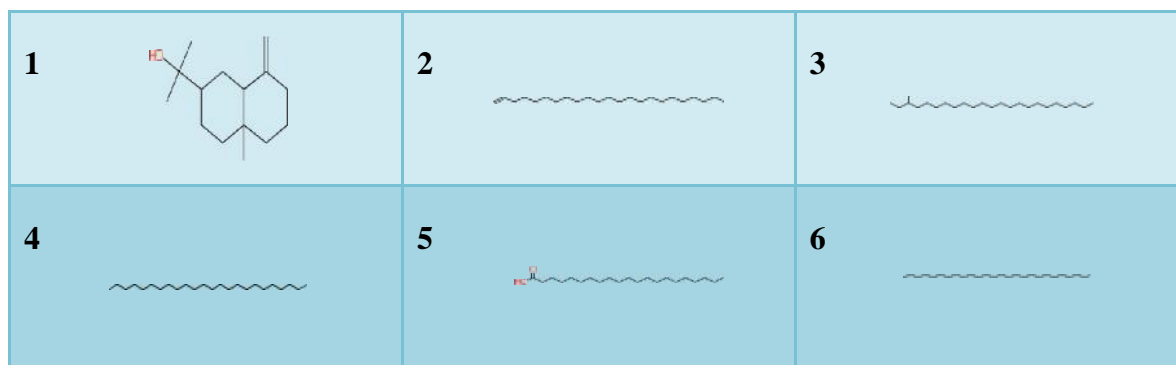
TLC: The analysis by TLC shows that there are **10** products separated of the essential oil extract of this plant (Figure 1). Spots on TLC were visualized under UV light and after the revelation by the iodine.

CLC: Next, in second step, the oil was fractionated by Column Liquid Chromatography. This analysis reveals the separation of **6** products of the essential oil extracted from *Warionia saharae* including the major product of this plant ( -Eudesmol).



**Figure1.** Result of TLC analysis of essential oil from *Warionia saharae*

Compounds **1-6** (Figure2) were isolated from the essential oil of *Warionia saharae*, to give - Eudesmol (**1**) as a major component, its constituted approximately (32.87%) of our oil sample, 1-Tricosene (**2**), 3-Methyltricosane (**3**), Tetracosane (**4**), Heneicosanoic acid (**5**) and Hexacosane (**6**). All these compounds were isolated for the first times from *Warionia saharae* except the -Eudesmol[07].



**Figure 2.** Chemical structures of compounds 1-6

**Table 1:** Isolated compounds from *Warionia saharae* essential oils

N <sup>o</sup>	IK DB-5	Formula	Name
1	1654	C <sub>15</sub> H <sub>26</sub> O	Bêta-Eudesmol
2	2296	C <sub>23</sub> H <sub>46</sub>	1-Tricosene
3	2375	C <sub>24</sub> H <sub>50</sub>	3-Methyltricosane
4	2400	C <sub>24</sub> H <sub>50</sub>	Tetracosane
5	2424	C <sub>21</sub> H <sub>42</sub> O <sub>2</sub>	Heneicosanoicacid
6	2600	C <sub>26</sub> H <sub>54</sub>	Hexacosane

The structures of the compounds were elucidated by GC-IK, IR spectroscopy as well as by comparing their spectroscopic data with those reported in the literature.

### Conclusion

Thus, the major products have been successfully isolated from essential oil of *Warionia saharae*. This compound is a sesquiterpene alcohol presente in essential oil of several plants.

The -Eudesmol has multiple pharmacological effects. Its anti-inflammatory effect was shown and was proved recently[10], and The optically pure (+)- -Eudesmol is a possible starting material for the synthesis of several termite defense compound[11].

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