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 β-Eudesmol, 1-Tricosane, 3-Methyltricosane, Heneicosanoic acid and Hexacosane, witch include the major compounds of essential oil of Warionia saharae. This has been extracted 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’aitz’’[4], “Abessas”[5] and “afezded” in some Moroccan region. The Berber name is “Tazart nifiss”[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 chromatography 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, Algéria)[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 obtaines 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 gaz chromatograph using the retention indices obtained by injection of the homologous hydrocarbons series C₆-C₄₄ in the same conditions, and infrared spectrum IR was carried out using a AVATAR 320 FFIR, thermo Nicolet apparatus. A SHIMADZU GC-2014 gaz chromatograph equipped with a FID, and a DB-5 capillary column (30 mx 0.32mm i.d., film thickness 0.25µm) was used. Carrier gaz, N₂, 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 fractioned 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 (β-Eudesmol).

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

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

<table>
<thead>
<tr>
<th>No</th>
<th>IK DB-5</th>
<th>Formula</th>
<th>Name</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>1654</td>
<td>C_{15}H_{26}O</td>
<td>Bêta-Eudesmol</td>
</tr>
<tr>
<td>2</td>
<td>2296</td>
<td>C_{23}H_{46}</td>
<td>1-Tricosene</td>
</tr>
<tr>
<td>3</td>
<td>2375</td>
<td>C_{24}H_{50}</td>
<td>3-Methyltricosane</td>
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<td>4</td>
<td>2400</td>
<td>C_{24}H_{50}</td>
<td>Tetracosane</td>
</tr>
<tr>
<td>5</td>
<td>2424</td>
<td>C_{21}H_{42}O_{2}</td>
<td>Heneicosanoicacid</td>
</tr>
<tr>
<td>6</td>
<td>2600</td>
<td>C_{26}H_{54}</td>
<td>Hexacosane</td>
</tr>
</tbody>
</table>

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


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