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CHEMICAL COMPOSITION OF THE ESSENTIAL OIL OF *Launaea arboresens* from Algerian Sahara

A. Cheriti,[1] A. Saad,[1] N. Belboukhari,[1] and S. Ghezali[2]

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The genus *Launaea* (Asteraceae) is represented in the flora of Algeria by nine species including five endemics of north africa [1]. Among them, *Launaea arboresens* (local name "Oum Lbina") is an endemic herbaceous medicinal plant mainly distributed in the southwest of Algeria and southeast of Morocco [2, 3].

To the best of our knowledge, there are no references about the oil content and chemical composition of *Launaea arboresens*. Thus, in continuation of our ethnopharmacological, phytochemical, and antimicrobial studies of the Algerian Sahara medicinal plants [4–6], we report here the results of our studies on the composition of *L. arboresens* oil from Algerian Sahara.

The species were collected during flowering in southwestern Algeria and identified by ANN (National Agency of Nature protection – Bechar, Algeria). A voucher specimen is kept in the Herbarium of POSL Laboratory, Faculty of Sciences (University of Bechar, Algeria) under No. CA 00/25. The plants were crumbled and hydrodistilled for 6 hours using a Clevenger apparatus. The oil was subsequently dried over anhydrous sodium sulfate and stored at 4°C until analysis.

GC/MS analysis was performed on a Shimadzu GC-17A gas chromatograph, interfaced with a Shimadzu QP5000 mass spectrometer, operating at electron impact of 70 eV with an ion source temperature at 250°C and scan mass range of 40–400 *m/z* at a sampling rate of 0.5 scan/s. A Supelco CBP-5 capillary column (30 m × 0.25 mm, film thickness 0.25 μm) was used. The oven temperature was programmed as follows: 60°C for 2 min and then up to 240°C at 3°C/min, then to 300°C at 10°C/min, ending with a 10 min at 300°C. The carrier gas was He (1.0 mL/min), and the injector and detector temperatures were 240°C. Samples were injected by splitting and the split ratio was 1:5.

The hydrodistillation of the aeriel part of *Launaea arboresens* gave a green yellowish oil in a yield of 0.07% on dried material. Seventeen compounds were identified, representing 84.96% of the total oil [7, 8]. The essential oil of *L. arboresens* was a mixture of different substances (Table 1), including oxygen-containing monoterpenes, alcohols, aldehydes, and esters. Esters were the dominant group in the oil (58.24%) with dioctyl phthalate (38.6%) and decanoic acid, decyl ester (12.07%) as the main constituents.

Alkenes and ketones were the minor constituents of the oil. The terpenoid portion consisted of two oxygenated monoterpenes accounting for 7.24% of the oil. We also found aldehydes in considerable amounts (16.09%).

The oil components were identified by computer search using the NIST21 and NIST107 libraries of mass spectral data, by comparison of their retention indices and visual inspection of the mass spectra from the literature for confirmation. The relative amounts of the individual components found in the oil (Table 1) are based on the peak areas obtained, without FID response factor corrections.

1) Phytochemistry and Organic Synthesis Laboratory, University of Bechar, BP 114 Bechar, 08000, Algeria, fax 213 49 81 52 44, e-mail: Karimcheriti@yahoo.com; 2) Department of Industrial Chemistry, IAP, 35000, Boumerdes, Algeria. Published in Khimiya Prirodnykh Soedinenii, No. 3, p. 296, May-June, 2006. Original article submitted July 22, 2005.

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TABLE 1. Chemical Composition of the Essential Oils from *Launaea arboresens*

Compound	Rt	Percentage
Pentanedioic acid, dimethyl ester	11.475	Tr.
Eucalyptol	29.883	7.08
Hexadecanol	32.717	2.57
Octanol	33.067	0.64
α-Limonene diepoxide	33.433	0.16
(Z)-6-Octen-2-one	33.833	0.64
Heptanal	35.025	0.16
3,4-Dimethylcyclohexanol	35.617	0.16
1,2-Benzenedicarboxylic acid, butyl octyl ester	39.017	Tr.
Dibutylphthalate	44.225	2.73
(Z)-3-Dodecene,	48.917	Tr.
Hexanedioic acid, dioctyl ester	57.150	0.16
(*E*)-2-Heptenoic acid, ethyl ester,	59.908	4.66
Dioctyl phthalate	61.200	38.6
bis(2-Butoxyethyl)-phthalate	65.083	Tr.
11-Octadecenal	67.463	15.29
Decanoic acid, decyl ester	74.600	12.07
Total		84.96
Oxygenated monoterpenes		7.24
Alcohols		2.73
Aldehydes		16.09
Alkenes, ketones		0.65
Esters		58.24

Rt: retention time (min).
Tr.: trace amount (<0.01%).

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