Asian Journal of Chemistry Vol. 19, No. 6 (2007), 4954-4956

NOTE

Guaianolide and Pseudoguaianolide from *Pulicaria laciniata*

M.C. ABERKANE*, A. DIBI, H. HABA, M. BENKHALED, A. BENKOUIDER, M. MOKHTARI, P. MOSSET† and P. PALE‡

Department of Chemistry, Faculty of Sciences, Universitu of Batna, Batna 05000, Algeria
E-mail: aberkanemc@yahoo.fr

The first study of the aerial parts of *Pulicaria laciniata* afforded one guaianolide, one pseudoguaianolide and a β-sitosterol. The structures of the three compounds were elucidated by spectroscopic techniques including 2D NMR experiments.

Key Words: *Pulicaria laciniata*, Astral, Guaianolide, Asteracees, Sesquiterpene lactones, Pseudoguaianolide.

Many species of the flea-bane family were studied and many works were reported in the literature particularly on the *Pulicaria undulata*[1] and the *Pulicaria crispa*[2,3].

The *Pulicaria laciniata* of the astral order of the asteracees family[4,5] is an Algerian and Tunisian endemic species (Biskra, Laghouat and South of Tunisia)[4]. It is also found in the region of Aures. The plant was collected during the flowering season, in June 2001, in the surroundings of Medracene. It was identified by Dr. Oudjehih Bachir, Department of Agronomy, University of Batna, Algeria. This plant was not phytochemically studied before, although it was used in traditional medicine by people as antalgic in decoction and analgesic for local application. A specimen is deposited at the herbarium of the department.

A portion of the chloroform extract (10 g) of the aerian parts of the dried plant (1 kg) was subjected to chromatography on a silica gel column eluted by petroleum ether whose polarity is gradually increased by addition of ethyl acetate. 12 Fractions were recovered. All the fractions obtained from this column are complex mixtures. The fraction 8 (1.3 g) revealing prevalent products was also repeatedly treated by chromatography on a silica gel column which was eluted by petroleum ether-ethyl

†Laboratoire de Synthèse et activation des biomolécules, Av du Général Leclerc, Campus de Baulieu-E.N.S.C de Rennes, France.

‡Laboratoire de synthèse et réactivité organique, Institut Le Bel, U.L.P Strasbourg, France.

acetate mixtures (95-5, 90-10, 85-15, 80-20) and finally purified on TLC (petroleum ether/ethyl acetate 80-20).The results of this experimental procedure are two compounds (**1**) (26 mg) and (**2**) (2.3 mg).

(**1**) Isolated as a white lacquer exhibited the following ^{13}C (100.6 MHz $CDCl_3$) resonances: 47.7 (C-1), 28.9 (C-2), 32.7 (C-3), 69.9 (C-4), 69.7 (C-5), 30.6 (C-6), 44.4 (C-7), 82.6 (C-8), 40.4 (C-9), 3406 (C-10), 139.1 (C-11), 170.1 (C-12), 119.9 (C-13), 14.7 (C-14), 15.5 (C-15).

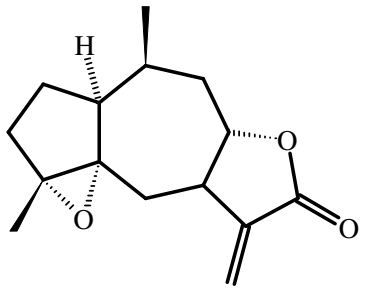
(**2**) Isolated as a viscous colourless oil (turning to white solid after some time) exhibited the following ^{13}C in $CDCl_3$ resonances: 47.2 (C-1), 24.4 (C-2), 35.1 (C-3), 221.5 (C-4), 50.9 (C-5), 35.3 (C-6), 45.4 (C-7), 80.5 (C-8), 41.4 (C-9), 32.7 (C-10), 139.9 (C-11), 169.5 (C-12), 120.6 (C-13), 17.2 (C-14), 23.6 (C-15).

The compounds obtained from the purification operations are sesquiterpene lactones. The molecular ion peak is at m/z 248 in the mass spectrum and the corresponding molecular formula is $C_{15}H_{20}O_3$.

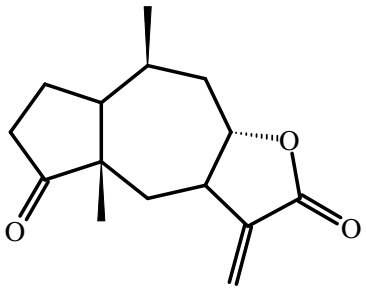
Their structures were elucidated by ^1H NMR spectra (400 MHz) (**1**), (500 MHz) (**2**) and the different 2D experiments (Cosy, Hetcor, HMBC and Noesy).

The compound **1** is a sesquiterpene lactone of the guaianolide epoxid type known and isolated in *Pulicaria undulata*[1] and in inula species[6-8]: the 4α,5α-epoxy-10α-14-H-inuviscolide.

The compound **2** is also a sesquiterpene lactone, a pseudoguaianolide isolated in the *Pulicaria undulata*[1], the *Pulicaria crispa*[2] and the Ondetia linearis[9].



1



2

ACKNOWLEDGEMENT

The authors thank L. Bouakkar for the translation of French language to English.

REFERENCES

1. A. Rustaiyan, Z. Habibi, M. Saberi and J. Jakupovic, *Phytochemistry*, **30**, 2405 (1991).
2. M. Abdel-Mogib, J. Jakupovic, A.M. Dawidar, M.A. Metwally and M. Abou-Elzahab, *Phytochemistry*, **29**, 2581 (1990).
3. F. Bohlmann, K.H. Knoll and N.A. El-Emary, *Phytochemistry*, **18**, 1231 (1979).
4. P. Ozenda, Flore et vegetation du Sahara, CNRS Paris France, edn. 3 (1991).
5. P. Quezel and S. Santa, Nouvelle Flore de L'Algerie et des régions desertiques meridionales Tome, CNRS, edn. 2 (1963).
6. F. Bohlmann, P.K. Mahanta, J. Jakupovic, R.C. Rastogi and A.A. Natu, *Phytochemistry*, **17**, 1165 (1978).
7. V. Vlatka, J. Dragoslav, M. Slobodan and M. Slobodan, *Phytochemistry*, **28**, 1763 (1989).
8. G. Topcu and S. Oksuz, *Phytochemistry*, **29**, 3666 (1990).
9. C. Zdero and F. Bohlmann, *Phytochemistry*, **28**, 1653 (1989).

(*Received*: 30 October 2006; *Accepted*: 4 May 2007) AJC-5657