

Phytochemical communication

Ozoroalide, a new macrolide from *Ozoroa insignis*

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Received 21 July 2005; accepted 5 April 2007

Available online 5 May 2007

Abstract

From the roots of *Ozoroa insignis* a new orsellinic acid named ozoroalide (**1**) and anacardic acid methyl ester (**2**) were isolated and identified on the basis of spectroscopic methods.

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Keywords: *Ozoroa insignis*; Ozoroalide; Anacardic acid methyl ester

1. Plant

Ozoroa insignis Del. (*Heeria insignis* Del.) (Anacardiaceae), collected in January 1994 at Contuboel, Guinea-Bissau was identified in the Herbarium of Botany Centre (LISC), where a voucher specimen is deposited.

2. Uses in traditional medicine

Roots are used as a remedy for diarrhea, venereal diseases, tapeworm and hookworm, schistosomiasis, kidney trouble, migraine, and malaria [1–7]. The leaves like the roots have purgative action [6]. Poultices of pulped leaves are used for swellings on the feet, and a paste of leaves and bark to treat to skin-diseases [6]. In Guinea-Bissau, the infusion of roots is taken by women after childbirth to increase lactation [8]. In addition, anthelmintic effect of root bark and leaves against the worms *Schistosoma mansoni* and *Hymenolepis diminuta* [4], cytotoxic activity of a bark extract against Hep-G2, MDA-MB-231, and 5637 human cancer cell lines [1], and in vitro topoisomerase inhibition of stembark and stemwood [9], have been reported.

3. Previously isolated constituents

Ginkgolic acid [1], anacardic acid [5], and essential oils [10].

4. New isolated constituents

Ozoroalide (**1**, Fig. 1), (yield: 13 mg from 1.65 kg of dried roots), light yellow solid, mp 188–189 °C; $[\alpha]_D^{25} + 5.2^\circ$ (*c* 1.3 CHCl₃); $[\alpha]_{365}^{25} - 63.3$ (*c* 0.3 CHCl₃); UV max (EtOH): 207 (log ε 3.85), 249 (3.09), 283 (2.94) nm; IR bands

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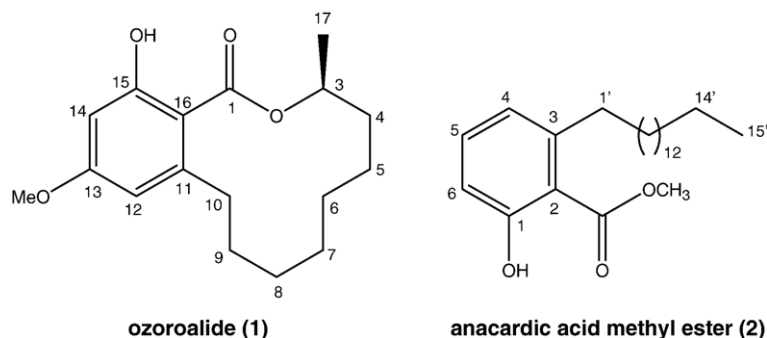


Fig. 1. Structure of compounds 1 and 2.

(NaCl): 3364, 1686, 1606, 1280 cm^{-1} ; HRESIMS: m/z 293.1740 $[\text{M}+\text{H}]^+$. Calc. for $\text{C}_{17}\text{H}_{25}\text{O}_4$ 293.1747. EIMS m/z : 292 $[\text{M}]^+$ (70), 181 (100), 176 (65), 137 (65), 83 (25). $^1\text{H-NMR}$ (400 MHz, CDCl_3): δ 1.26 (1H, *m*, H-7a), 1.31 (3H, *d*, 6.4 Hz, H-17), 1.32 (1H, *m*, H-8a), 1.40 (1H, *m*, H-6a), 1.41 (1H, *m*, H-5a), 1.47 (1H, *m*, H-7b), 1.48 (1H, *m*, H-8b), 1.54 (1H, *m*, H-6b), 1.61 (1H, *m*, H-4a), 1.64 (2H, *m*, H-9a, H-9b), 1.67 (1H, *m*, H-5b), 1.90 (1H, *m*, H-4b), 2.46 (1H, *ddd*, *J* 13.4, 6.7, 6.7 Hz, H-10a), 2.64 (1H, *ddd*, *J* 13.4, 6.7, 6.7 Hz, H-10b), 3.70 (3H, *s*, OCH_3), 5.27 (1H, *m*, H-3), 6.21 (1H, *s*, H-14), 6.22 (1H, *s*, H-12); $^{13}\text{C NMR}$ (100.61 MHz, CDCl_3): δ 19.5 (C-17), 21.3 (C-5), 24.2 (C-6), 25.5 (C-7), 26.4 (C-8), 30.0 (C-9), 30.4 (C-10), 32.3 (C-4), 55.8 (OCH_3), 72.4 (C-3), 97.0 (C-14), 108.3 (C-12), 117.3 (C-16), 143.0 (C-11), 157.7 (C-15), 157.9 (C-13), 169.1 (C-1); HMBC (key H \rightarrow C correlations): $\text{OCH}_3 \rightarrow$ C-13; H-10 \rightarrow C-9, C-11, C-12, C-16; H-12 \rightarrow C-10, C-16; H-14 \rightarrow C-12, C-15, C-16; NOESY (key H \leftrightarrow H correlations): $\text{OCH}_3 \leftrightarrow$ H-12, H-14; H-12 \leftrightarrow H-10a.

Anacardic acid methyl ester (2, Fig. 1): (yield: 50 mg from 1.65 kg of dried roots), white solid, mp 38–39 °C; UV max (EtOH): 210 (log ϵ 6.72), 245 (6.05), 311 (5.76) nm; IR bands (NaCl): 3064, 2917, 2852, 1665, 1607, 1578, 1449, 1315, 1250, 1205 cm^{-1} ; EIMS m/z : 362 $[\text{M}]^+$ (83), ($\text{C}_{23}\text{H}_{38}\text{O}_3$); 330 (48), 312 (40), 166 (63), 161 (74), 149 (100); $^1\text{H-NMR}$ (400 MHz, CDCl_3): δ 0.89 (3H, *m*, 15'-Me), 1.26 (24H, *m*, H-3' to H-14'), 1.53 (1H, *m*, H-2'), 2.88 (1H, *m*, H-1'), 3.96 (3H, *s*, OCH_3), 6.72 (1H, *d*, 7.2 Hz, H-4), 6.85 (1H, *d*, 8.4 Hz, H-6), 7.29 (1H, *dd*, 8.4, 7.2 Hz, H-5); $^{13}\text{C NMR}$ (100.61 MHz, CDCl_3): δ 14.1 (15'- CH_3), 22.7 (C-14'), 27.2, 29.4, 29.5, 29.7, 29.9, 31.7 (C-3' to C-13'), 31.9 (C-2'), 36.4 (C-1'), 52.1 (OCH_3), 111.9 (C-2), 115.6 (C-6), 122.4 (C-4), 134.2 (C-5), 146.2 (C-3), 162.6 (C-1), 172.0 (CO); HMBC (key H \rightarrow C correlations): $\text{OCH}_3 \rightarrow$ CO; H-1' \rightarrow C-2, C-3, C-4; H-4 \rightarrow C-1', C-2; H-6 \rightarrow C-1, C-4; NOESY (key H \leftrightarrow H correlations): H-4 \leftrightarrow H-1', H-2'; H-5 \leftrightarrow H-4, H-6.

Acknowledgment

Fundação para a Ciência e a Tecnologia for a post-doc. grant (SFRH/BPD/14656/2003).

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