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SHORT COMMUNICATION

NOVEL TRITERPENES FROM *ALSTONIA BOONEI* AND *ANTHOCLEISTA NOBILIS*

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ABSTRACT. Two compounds were isolated from the ethyl ether extract of the barks of *Alstonia boonei* and *Anthocelista nobilis* and identified as lanosta-7,24-dien-3-one and the acetate of the corresponding 3-hydroxy compounds on the basis of NMR studies.

INTRODUCTION

The *Alstonia boonei*, De Wild, (Apocynaceae) and *Anthocleista nobilis* (Loganaiacea) named locally in west central region of Ivory Coast as *Kla* and *Gbrolokou*, respectively, are big and tall trees that grow throughout the region. The leaves and barks are extracted with alcohol or with water (hot or cold) and used for therapeutic applications including antimalarial, anthelminthic, antihypertension, antihepatitis, and antidiabetic activities, as well as in different applications in Ivory Coast.

RESULTS AND DISCUSSION

The ethyl ether extract of the dry barks (200 g) of the two plants on column chromatography over florisil gel yielded three crystalline compounds; **1**,**2**, and **3** from *Alstonia boonei* and **1** and **2** from *Anthocelista nobilis*. The compound **3** is known to be β-amyrin [1] from its mass spectrum having the peak at *m/z* 468; m.p. 180 °C; IR ν_{max} 3630 cm^{-1}(OH) and the tabulated data of ^{1}H and ^{13}C NMR.

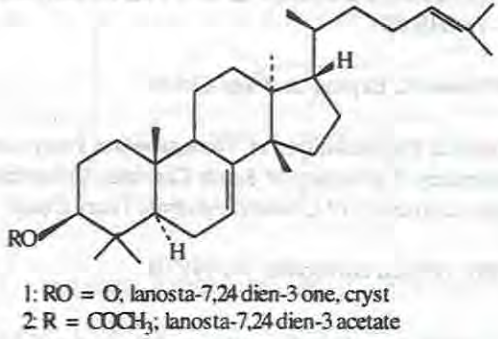
The unknown compounds **1** and **2** were characterized by ^{1}H and ^{13}C NMR which have the tirucalla [2] structures, the difference being the presence of the double bond at position 7. These two compounds were very unstable when subjected to the vacuum pump and changed from viscous oil to semi-solid forms.

In steroids and other rigid systems, a functional group on one part of the molecule can strongly affect the rate of reaction taking place at a remote part of the same molecule by altering the conformation of the whole skeleton. This effect, the conformational transmission, is found in compounds **1** and **2**.

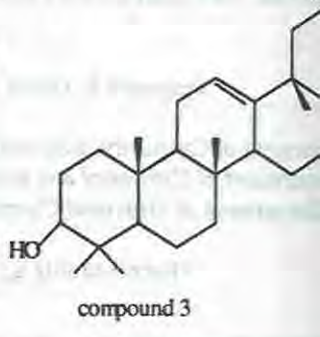
Compound **1**. EIMS: *m/z* 242, m.p. 93 - 103 °C, IR ν_{max} (cm^{-1}) 1707 and 1456 (C = O) at position 3.

Compound **2**. EIMS: *m/z* 468; the presence of an acetate group was confirmed by the signal

at δ 4.50 (m, 1H, H-C-OAc) in ^{1}H NMR spectrum. IR ν_{max} (cm^{-1}) 1733 and 1451 (O = C
The α- and β-amyrin acylated with fatty acids have interesting biological activities [4-7



1: RO = O; lanosta-7,24 dien-3 one, cryst
2: R = $COCH_3$; lanosta-7,24 dien-3 acetate



compound 3

EXPERIMENTAL

Unless specified otherwise, all extraction or purifications were carried out in an atmosp
dry air and the samples were stored under nitrogen atmosphere. All solvents were appro
distilled and degassed prior to use. The TLC separations were performed in air by using
100-200 mesh (Fisher Scientific Company) or by using silica gel (60A, F254) or
(Whatman, 0.25 mm). IR spectra were recorded on Nicolet 5DXB FT-IR spectrometer. Th
(^{1}H and ^{13}C) spectra were recorded on AM 500 Bruker Spectrometer. Mass spectra were r
on VG Model 70SQ Hybridmass spectrometer (direct inlet, electron impact ionizatio
rotation measurements were carried out on Perkin-Elmer 243 B polarimeter.

About 200 g of crushed, dried bark of *Alstonia boonei* and *Anthocleista nobilis* were ex
separately in 2 L of diethyl either in a soxhlet apparatus by refluxing for 24 h. A crude
yellow oil (200 mg) was obtained from each plant after concentration on vacuum pressu
purification of the crude product was done on florisil gel column (eluting solvent was 20
ether/hexane). The eluting solvents used for TLC were 20 % ethyl ether/hexane for co
1 and 20 % ethyl acetate/hexane for compounds **2** and **3**.

Compound 1. White needles from MeoH, mp 93 - 103 °C; $[\alpha]^{25}_D$ = +16 ($CHCl_3$; c = 2).
m/z 424, 409, 313, 218, 95 and proposed molecular formula as lanosta-7,24- dien-3-one, C
IR (CCl_4): ν_{max} cm^{-1} 2933; 1708; 1456; 1380; 1241; 1118; 779; 621. ^{1}H NMR ($CDCl_3$)
(s, 3H), 0.87 (s, 12H), 0.97 (s, 3H), 1.60 (s, 3H), 1.67 (s, 3H), total of 8C-methyls; 4.50
H-C-OAc), 5.01 (m, 1H, HC = C) and 4.55 (d, 1H, HC = C, lateral).

Compound 2. White solid, mp 140 - 150 °C; $[\alpha]^{25}_D$ = -9 ($CHC1_3$ c = 1.5). EIMS: *m/z* 46
408, 393, 365, 339, 218, 189, 135, 95, 69, lanosta-7,24-dien-3-acetate, $C_{32}H_{52}O_2$. IR (CC
cm^{-1} 2933; 1733; 1451; 1380; 1241; 1118; 1026; 985; 785.^{1} H NMR: δ 0.75 (s, 3H),
12H), 0.97 (s, 3H), 1.60 (s, 3H), 1.67 (s, 3H), total of 8C-methyls; 2.01 (s, 3H, CH_3OC
(m, 1H, H-C-OAc), 5.01 (m, 1H, HC = C) and 4.55 (d, 1H, HC = C, lateral).

Compound 3. White solid from hexane, mp 180 °C; $[\alpha]^{25}_D$ = +69.5 ($CHCl_3$; c = 2); EI

426, 411, 393, 218, 203, 175 and proposed molecular $C_{30}H_{50}O$, β-amyrin. IR (CCl_4): ν_{max} cm^{-1} 3631; 2950; 2856; 1464; 1380; 1363; 1030; 996. ^1H NMR ($CDCl_3$): δ 0.8 - 1.3 (s, 8 x Me), 2.37 (ddd, J = 15.9, 6.8 and 3.4 Hz, H-2) and 2.55 (ddd, J = 15.9; 7.3 and 11.0 Hz, H-2) and 5.15 (m, 1H, HC = C).

Table 1. ^{13}C NMR chemical shifts for the terpenoid compounds **1**, **2** and **3** ($CDCl_3$ solution, ppm from TMS).

Carbon No.	1	2	3	Carbon No.	1	2	3
1	35.90	35.70	38.73	16	30.90	30.90	28.16
2	27.82	27.90	27.29	17	50.23	50.23	33.77
3	218.60	81.40	78.97	18	15.80	15.80	59.19
4	38.56	38.56	38.84	19	18.30	18.30	39.76
5	50.18	50.18	55.29	20	37.02	37.02	39.65
6	19.20	19.20	19.45	21	18.80	18.80	31.29
7	125.30	105.70	32.80	22	36.68	36.68	41.59
8	134.40	152.60	38.78	23	25.54	25.54	28.16
9	50.50	50.50	47.74	24	125.30	124.70	15.65
10	37.20	37.20	37.00	25	130.80	140.02	15.65
11	21.10	21.10	23.57	26	17.60	17.60	16.95
12	27.04	27.04	121.80	27	25.80	25.80	28.75
13	43.30	43.40	145.10	28	24.30	24.30	17.48
14	50.16	50.16	41.80	29	28.02	28.02	17.48
15	31.10	31.10	26.22	30	15.40	15.40	21.36

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