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Two New Sesquiterpenes from *Euonymus phellomana Loes.*

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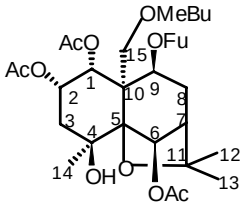
Abstract: Two new β-dihydroagarofuran sesquiterpenes were isolated from *Euonymus phellomana Loes.*and their structures were established on the basis of spectral analysis.

Keywords: *Euonymus phellomana Loes.*, β-dihydroagarofuran, sesquiterpenes.

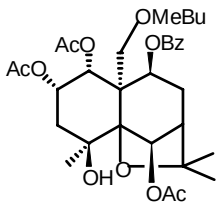
Two new β-dihydroagarofuran sesquiterpene polyol esters have been isolated from *Euonymus phellomana Loes.* growing in Wen county, Gansu Province of China.

Compound **1**, white needle crystals, mp: 154-156℃, analyzed for $C_{31}H_{42}O_{13}$ by FABMS (*m/z*: 623, M+1) and EIMS showed peaks due to the loss of acetic acid, β-furoic acid and α-methylbutanoic acid. IR showed ester carbonyl at 1745 cm^{-1} and hydroxyl at 3420cm^{-1}. The ^{1}HNMR and ^{13}CNMR spectrum revealed the presence of three acetoxy, one (β-)furancarboxy and one (α-methyl)butanoyl. Considering the other NMR data (**Table 1**), it is identified as β-dihydroagarofuran sesquiterpene substituted with five ester groups initially.

COLOC showed such cross peaks: δ161.8(Fu-CO2-)/δ5.22(H-9); δ170.2 (Ac-CO2-)/δ5.58(H-1); δ170.5(Ac-CO2-)/δ5.47(H-2); δ169.4(Ac-CO2-)/δ6.11(H-6); δ174.4 (MeBu-CO2-)/δ4.99, 4.41(H-15a,b). In NOESY there are correlation between H-1, H-2 /H-3ax(J1,2=3.4), showing H-1ax, H-2eq; H-6: δ6.11(s) indicated angle of 7α, 6 should be 90°2. Cross signals of H-1ax and δ8.01, 6.72(-OFu) determined β substitued ester group at C-9. Thus, it is 1α, 2α, 6β-triacetoxy-4β-hydroxy-9β-(β-)furancarboxy-15-(α-methyl) butyroyloxy-β-dihydroagarofuran.



1



2

Compound **2**, white needle crystals, mp: 170-172℃. FABMS(m/z: 633, M+1) gave C33H44O12 . It was spectroscopically similar to **1**. NMR revealed the presence

of functional groups and 1α, 2α, 6β, 9β, 15-quinquesterified-β-dihydroagarofuran parent. Close comparison of NMR spectra of them revealed the benzoxy not furoylate at C-9 of **2**(**Table 1**). COLOC gave the positions of three acetate, one benzoxy and one isobutyrate, respectively. So, **2** is 1α, 2α, 6β-triacetoxy-4β-hydroxy-9β-benzoyloxy-15-(α-methyl) butyroyloxy-β-dihydroagarofuran.

Table 1. ^{1}HNMR, ^{13}CNMR data of **1*** and **2*** (400MHz, $CDCl_3$)

H(J_{Hz})	1	2	C(DEPT)	1	2
1	5.58d(3.4)	5.65d(3.4)	1	69.9(C H)	69.9(CH)
2	5.47d(3.4)	5.51d(3.4)	2	68.2(C H)	68.1(CH)
3	2.02m	2.20m	3	41.9(C H_2)	41.9(CH_2)
		1.99m	4	69.7(C)	69.7(C)
			5	91.1(C)	91.1(C)
6	6.11s	6.13s	6	78.1(CH)	78.1(CH)
7	2.23m	2.18m	7	49.1(CH)	49.1(CH)
8a	2.57dd	2.59m	8	34.5(CH_2)	34.5(CH_2)
8b	2.53dd	2.55m			
9	5.22d(7.0)	5.33d(8.0)	9	69.1(CH)	69.5(CH)
			10	55.0(C)	55.1(C)
			11	84.5(C)	84.6(C)
12	1.47s	1.48s	12	25.0(CH_3)	25.0(CH_3)
13	1.47s	1.49s	13	25.5(CH_3)	25.7(CH_3)
14	1.55s	1.56s	14	29.3(CH_3)	29.3(CH_3)
15a	4.99d(13.0)	5.00d(13.0)	15	65.4(CH_2)	65.4(CH_2)
15b	4.41d(13.0)	4.44d(13.0)			

*NMR revealed the same presence of three AcO of **1** and **2** [δH: 2.09(3H,s), 2.11(3H, s),2.27(3H,s); δC:21.1,21.2,21.5,169.4,170.2,170.5]; (α-Me)Bu(**1**) [δH: 0.68(3H,t), 0.88(3H,d); 1.26(2H, m), 1.98(1H, m); δC: 11.2, 15.6, 25.3, 40.6, 174.4]; (α-Me)Bu(**2**)[δH: 0.54(3H,t), 0.77(3H, d); 0.91(1H,m), 1.15(1H,m), 1.87(1H,m); δC: 11.1, 15.6, 25.3, 40.6, 174.2]; FuO(**1**)[δH: 6.72(1H,d), 7.45(1H,d), 8.01(1H,s); δC: 109.9, 118.7, 143.8, 148.9, 161.8]; BzO(**2**) [δH: 7.58(1H, t), 7.45(2H, t), 8.03(2H, d); δC: 128.3, 129.1, 130.2, 133.5, 165.2].

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References

1. R. Bruning and H. Wagner, *Phytochemistry*, **1978**, *17* (11), 1821.
2. C. R. Smith, R. G. Millcr, *et al*, *J. Org. Chem.*, **1976**, *41* (20), 3264.

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