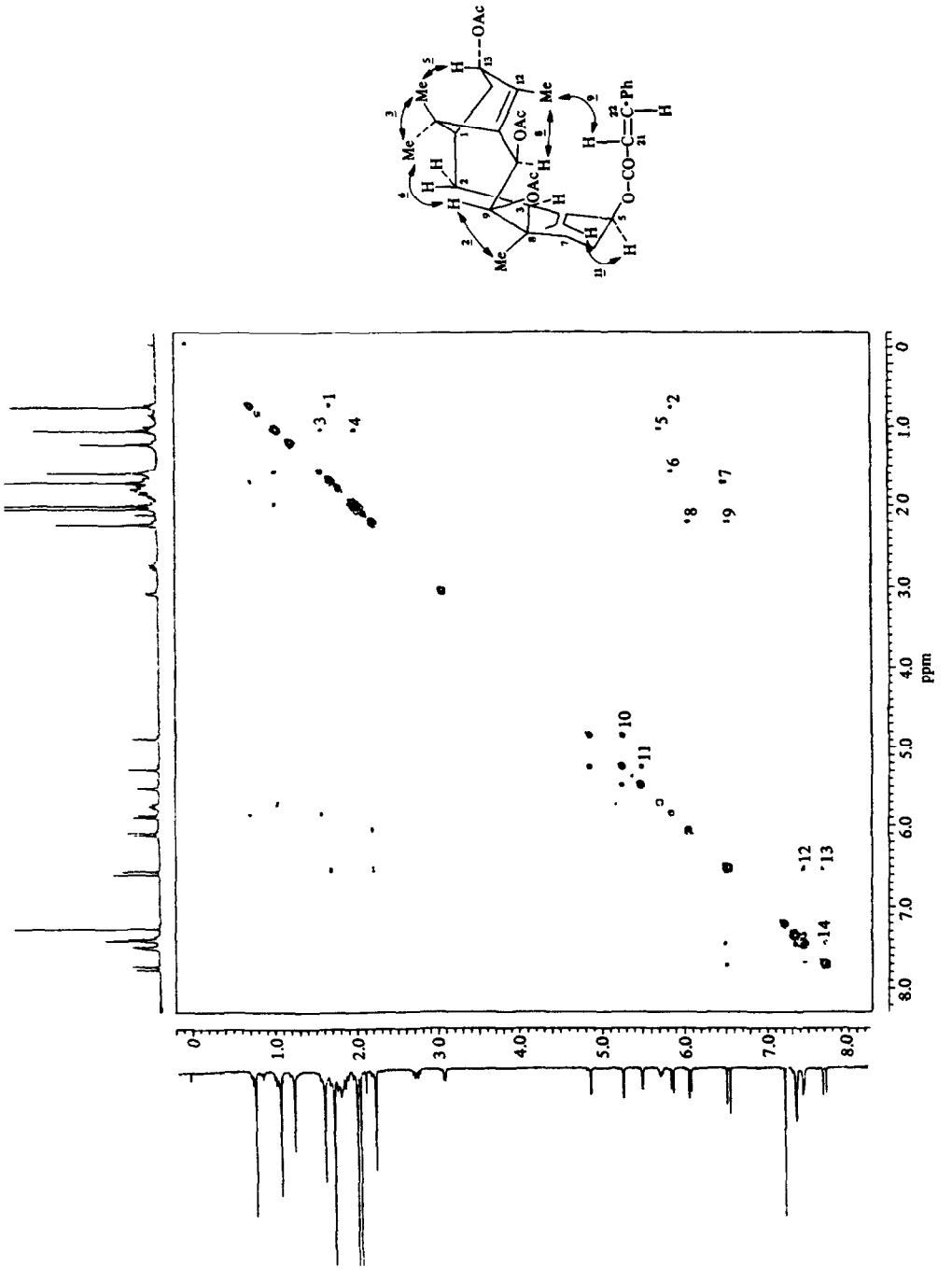
OAc
Me
OAc
Me
O-CO-C≡C-Ph
H
Me
ppm
0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0

mate group. The one-proton doublets at δ6.11 and 5.90 were attributed to H-10 and H-9 ($J_{9,10}$ = 10.7 Hz). A one-proton double double doublet at δ2.75 was assigned to H-14β [4]. Irradiation of the H-14β resulted in the collapse of the triplet at δ5.76 of H-13 into a broad singlet. Two broad singlets at δ5.30 and 4.91 for the H-16 and H-16′ protons collapsed into two singlets when the long range couplings (H-5 with H-16 and H-5 with H-16′) were removed by irradiating at δ5.54 of H-5. A one-proton doublet at δ3.10 was assigned to H-3 [3, 4]. Four three-proton singlets at δ2.23, 1.60, 1.06 and 0.76 were attributed to the methyls at C-12, C-15, C-15′ and C-8, respectively.

Moreover, DEPT and ^{13}C NMR spectra also confirmed the structure for 1, showing signals of seven primary carbons (–Me), five secondary carbons (>CH_2), 13 tertiary carbons (≥CH) and 10 quaternary carbons (>C<).

In order to confirm the stereochemistry of **1**, a NOESY Experiment was conducted. The NOESY spectrum (Fig. 1) showed 14 cross peaks and is listed in Table 1. The cross peak **5** belonged to the NOE signal of Me-15′ with H-13, and this indicated the β-position of H-13. The presence of a cinnamate group at the α-position of C-5 was shown by the cross peaks 9 and 11. Furthermore, cross peaks 6 and 8 confirmed that C-9 and C-10 both had an acetate group at the α- and β-position, respectively. The absolute configuration of **1** was not established. However, on the basis of the results presented above, structure **1** is assigned and the compound is 9α,10β,13α-triacetoxy-5α-cinnamoyoxytaxa-4(20),11-diene which has not been reported previously.

Table 1. 2D-NOESY Experiment on compound **1**

Cross peak	Interacting protons	Distance (Å) measured by model
1	Me-8/–OAc (C-9)	1.5*
2	Me-8/H-9	2.6
3	Me-15′/Me-15	3.0
4	Me-15′/–OAc (C-10)	1.2*
5	Me-15′/H-13	2.5
6	Me-15/H-9	1.5
7	–OAc (C-10)/H-21	1.2*
8	Me-12/H-10	2.5
9	Me-12/H-21	1.2*
10	H-16/H-16′	1.9
11	H-16′/H-5	2.3
12	H-21/Ar-H (2H)	1.7
13	H-21/H-22	2.8
14	Ar-H (2H)/H-22	2.5

The positions of the ester groups are not fixed, so the values marked with * are the nearest distances.

EXPERIMENTAL

General. Optical rotation was measured in $CHCl_3$. ^{1}H NMR, ^{13}C NMR, DEPT and 2D-NOESY spectra were recorded at 400 MHz in $CDCl_3$ with TMS as int. standard. DEPT expts. were carried out with the polarization pulse $\theta = 90°$ and 135°. Plant material was collected from the mountain of Yi-Lan Shien, Taiwan.

Extraction and fractionation. Powdered dried heartwood (11.6 kg) of *Taxus mairei* was extracted with MeOH (300 l) by cold percolation. The solvent was evapd *in vacuo* and the residue extracted with *n*-hexane (10 × 0.5 l). The *n*-hexane extract was evapd to dryness to yield the *n*-hexane soluble fraction (30 g).

The *n*-hexane soluble fraction (30 g) was adsorbed with silica gel (70–230 mesh, 40 g), then fractionated by CC over silica gel (70–230 mesh, 700 g). Elution was carried out with increasing polarities of *n*-hexane (2.5 l), *n*-hexane–$CHCl_3$ (94.5 l), $CHCl_3$ (25.5 l), $CHCl_3$–EtOAc (27.5 l) and EtOAc (25 l).

The fraction obtained by elution with $CHCl_3$ afforded **1**. Recrystallization from EtOH gave a colourless pellet, $[\alpha]_D^{25}$ +118.5° ($CHCl_3$, c 0.2), mp 165–166°, IR_{max}^{KBr} cm^{-1} 2965 (C–H), 1735 (C=O), 1710 (C=O), 1634 (C=C), 1230 (C–O), EIMS (Probe) 20 eV, *m/z* (rel int.) 592 [M$^+$] (1.0), 444 (96.5), 402 (27.5), 384 (21.0), 342 (30.5), 324 (39.0), 284 (27.0), 282 (100), ^{1}H NMR (400 MHz, $CDCl_3$) δ7.76 (1H, *d*, $J_{21,22}$ = 16 Hz, H-22), 6.58 (1H, *d*, H-21), 6.11 (1H, *d*, $J_{9,10}$ = 10.7 Hz, H-10), 5.9 (1H, *d*, H-9), 5.76 (1H, *dd*, H-13β), 5.54 (1H, *t*, H-5), 5.30 (1H, *br s*, $J_{5,16}$ = 1 Hz, H-16), 4.91 (1H, *br s*, $J_{5,16'}$ = 1 Hz, H-16′), 3.10 (1H, *d*, $J_{2,3}$ = 5.2 Hz, H-3), 2.75 (1H, *ddd*, *J* = 15, 10, 9 Hz, H-14β), 2.25 (3H, *s*, Me-12), 1.63 (3H, *s*, Me-15), 1.09 (3H, *s*, Me-15′), 0.78 (3H, *s*, Me-8), ^{13}C NMR (400 MHz, $CDCl_3$) δ170.65, 170.00, 169.88, 166.19, 148.61, 145.11, 136.95, 135.35, 134.36, 130.48, 129.03, 127.97, 118.84, 114.29, 77.45, 76.31, 72.57, 70.63, 43.06, 40.23, 39.20, 37.97, 32.29, 31.29, 28.25, 27.75, 27.41, 27.02, 21.02, 20.94, 20.82, 17.82, 17.82, 15.26.

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