Briarlides I−R, Briarane Diterpenes from a Gorgonian *Briareum* sp.

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Further investigations of the secondary metabolites of a gorgonian *Briareum* sp., collected at Amami Oshima, Kagoshima Prefecture, have yielded 10 new briarane diterpenes, briarlides I−R (**1**−**10**). The structures were elucidated on the basis of spectral analysis.

The gorgonian soft corals belonging to the genus *Briareum* (phylum Cnidaria, order Gorgonacea, family Briareidae) have proved to be a rich source of highly oxygenated briarane-type diterpenes that exhibit a range of biological properties such as cytotoxic,[1,2] anti-inflammatory,[3−5] antiviral,[3,6] insecticidal,[7,8] and antifouling activity.[9] Our previous investigations of this organism, collected at Amami Oshima in the southern region of Kagoshima Prefecture, afforded eight new briaranes designated as briarlides A−H, exhibiting cytotoxity toward Vero and MDCK cells.[10] Further investigation of the extract has yielded 10 additional new briaranes, briarlides I−R (**1**−**10**). Herein we wish to report the structural elucidation of compounds **1**−**10**.

Results and Discussion

Briarlides I−R (**1**−**10**) possessed a common briarane skeleton with an 8,17-epoxy group and a 9-acetyl group. The gross structures were determined by a combination of 1D NMR (Tables 1 and 2) and extensive 2D NMR experiments including ^{1}H−^{1}H COSY, HMQC, HMBC, and NOESY. They can be structurally divided into two classes according to differences in the six-membered ring. One class has a C-11,12-dioxygenated group and a C-13,14 double bond and contains briarlides I−N (**1**−**6**). The other class comprises briarlides O−R (**7**−**10**), which have a C-11,12 double bond and an C-14 acetyl group.Briarlide I (**1**) was isolated as a white mass, and the molecular formula was established to be $C_{36}H_{50}O_{14}$ by HRFABMS. The IR spectrum showed the presence of a tertiary hydroxyl group (ν_{max} 3538 cm^{-1}), a γ-lactone carbonyl (ν_{max} 1788 cm^{-1}), and an ester carbonyl (ν_{max} 1746 cm^{-1}). The ^{1}H NMR spectrum indicated resonances due to four acetyl protons (δ 2.02 × 2, 2.15, 2.31, 3H each, s) and octanoyl protons (δ 0.88, 3H, t, J = 6.8 Hz, 1.27, 8H, m, 1.56, 2H, overlapped, 2.25, 2H, dt, J = 3.3, 7.3 Hz). The proton sequences from H-2 to H-4, H-6 to H-7, H-9 to H-10, and H-12 to H-14 were confirmed by the ^{1}H−^{1}H COSY spectrum. The chemical shifts and the coupling patterns in the ^{1}H NMR spectrum were similar to those of briarlide D (**11**),[10] except for the downfield shift of H-3 (δ 6.09, 1H, dd, J = 1.7, 10.6 Hz) by 1.25 ppm, when compared to that of **11**. Therefore, the structure of **1** was acylated at C-2 to C-4, C-9, and C-12. Finally, briarlide **I** was assigned as 3-acetylbriarlide D, inasmuch as the spectral data of **1** were in good agreement with those of the diacetate obtained by acetylation of violide A (**12**)[11] or 12-deacetylbriarlide D.

The IR spectrum of briarlide J (**2**), $C_{26}H_{34}O_{12}$, indicated the absorptions due to a hydroxyl group (ν_{max} 3503 cm^{-1}), a γ-lactone carbonyl (ν_{max} 1782 cm^{-1}), and an ester carbonyl (ν_{max} 1740 cm^{-1}). The ^{1}H NMR spectrum showed resonances due to three acetyl groups (δ 2.13, 2.22, 2.27, 3H each, s), which were positioned at C-2, C-4, and C-9, on the basis of the chemical shifts of H-2 (δ 4.70, 1H, s), H-4 (δ 4.86, 1H, overlapped), and H-9 (δ 5.92, 1H, d, J = 4.0 Hz). The presence of a hydroxyl group at C-3 was confirmed by the downfield chemical shifts of H-3 (δ 4.86, 1H, overlapped) and H-15 (δ 1.32, 3H, s).[10] Inspection of the ^{1}H NMR data of **2** indicated that **2** was similar to briarlide B (**13**), except that an acetyl group was missing and the chemical shift of H-12 (δ 3.70, 1H, br d, J = 6.2 Hz) was shifted upfield by 1.01 ppm. The structure of **2**, therefore, was determined to be 12-deacetylbriarlide B.

The ^{1}H NMR spectrum of briarlide K (**3**), $C_{28}H_{38}O_{12}$, was similar to that of **2**, except for the resonances of the highfield shift of H-2 (δ 3.22, 1H, s) and of additional n-butanoyl protons (δ 0.98, 3H, t, J = 7.3 Hz, 1.68, 2H, overlapped, 2.38, 2H, t, J = 7.3 Hz). Comparison of the chemical shift of H-2 with that of **2** (δ 4.70) indicated that a hydroxyl group was positioned at C-2 instead of an acetoxyl group. The position of the n-butanoyl group was established to be at C-4 from the observation of HMBC correlation of H-4 (δ 4.90, 1H, d, J = 10.6 Hz) to C-21 (δ_C 173.5). Briarlide K was revealed to have the same relative sterochemistry as **2** by comparing the ^{1}H NMR coupling patterns and NOE spectrum of **3** with those of **2**. Thus, NOEs from H-20 (δ 1,23, 3H, br s) to H-12 (d 4.78, 1H, d, J = 6.1 Hz) and H-15 (δ 1.19, 3H, s) indicated that these protons were on the same β-face. H-2, which did not show correlation with H-15, was correlated with H-4 and H-10 (δ 2.48, 1H, d, J = 3.9), suggesting that these protons were situated on the opposite face (α) from H-15. The β-configuration of H-3 (δ 4.83, 1H, dd, J = 3.7, 10.6 Hz) was confirmed by the large coupling constant (J = 10.6 Hz) between H-3 and H-4. H-7 (δ 5.69, 1H, d, J = 9.7 Hz) was determined to be β-oriented by the NOE from H-3 and H-7. The small coupling constants (J = 3.9 Hz) between H-9 (δ 5.92, 1H, d, J = 3.9 Hz) and H-10 and NOEs from H-9 to H-15, H-18 (δ 1.69, 3H, s) and H-20 suggested H-9 and H-18 to have α- and β-configurations, respectively. [11]

Briarlides L−N (**4**−**6**) were deduced to possess acyl groups at both C-2 (δ 4.53−4.62, 1H, d, J = 6.2−7.2 Hz) and C-4 (δ 5.01−5.10, 1H, dd, J = 5.1−5.3, 12.6−13.3 Hz)

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Table 1. ^{1}H NMR Data of Compounds **1**−**10**[a]

no.	**1**	**2**	**3**	**4**	**5**
2	4.58 (br s)	4.70 (s)	3.22 (s)	4.54 (br d, 6.2)	4.62 (d, 7.2)
3α				2.07[b]	2.10[b]
3*β*	6.09 (dd, 1.7, 10.6)	4.86[b]	4.83 (dd, 3.7, 10.6)	2.94 (dd, 13.3)	3.01 (dd, 12.6, 14.7)
4α	5.14 (br d, 10.6)	4.86[b]	4.90 (d, 10.6)	5.10 (br dd, 5.3, 13.3)	5.01 (dd, 5.1, 12.6)
4*β*					
6	5.59 (br d, 7.0)	5.50 (br d, 9.3)	5.46 (br d, 9.7)	5.46 (br d, 9.5)	5.79 (br d, 9.2)
7	5.95[b]	5.73 (d, 9.3)	5.69 (d, 9.7)	5.78 (d, 9.5)	5.76 (d, 9.2)
9	5.95 (d, 4.4)	5.92 (d, 4.0)	5.92 (d, 3.9)	5.90 (d, 4.0)	5.95 (d, 3.8)
10	2.77 (d, 4.4)	2.59 (d, 4.0)	2.48 (d, 3.9)	2.69 (d, 4.0)	2.49 (d. 3.8)
12	4.69 (d, 6.2)	3.70 (br d, 6.2)	4.78 (d, 6.1)	4.71 (d, 6.4)	3.66 (d, 6.2)
13	5.95 (dd, 6.2, 10.3)	5.83 (dd, 6.2, 10.3)	5.91 (dd, 6.1, 10.3)	5.90 (dd, 6.4, 10.3)	5.82 (dd, 6.2, 10.4)
14	5.57 (d, 10.3)	5.36 (d, 10.3)	6.02 (d, 10.3)	5.49 (d, 10.3)	5.36 (d, 10.4)
15	1.16 (s)	1.32 (s)	1.19 (s)	1.19 (s)	1.18 (s)
16	2.20 (d, 1.1)	2.09 (d, 1.5)	2.05 (s)	2.16 (d, 1.1)	4.33 (br s)
18	1.67 (s)	1.70 (s)	1.69 (s)	1.68 (s)	1.70 (s)
20	1.22 (br s)	1.16 (br s)	1.23 (br s)	1.22 (br s)	1.15 (br s)
*Me*CO	2.02 × 2, 2.15, 2.31 (each s)	2.13, 2.22, 2.27 (each s)	2.05 (s), 2.25 (s)	2.07, 2.11, 2.24 (each s)	2.14, 2.24 (each s)
$C_nH_{2n+1}CO$	0.88 (3H, t, 6.8), 1.27 (8H, m), 1.56 (2H),[b] 2.25 (2H, dt, 3.3, 7.3)		0.98 (t, 3H, 7.3), 1.68 (2H)[b] 2.38 (t, 2H, 7.3)	0.88 (3H, t, 6.8), 1.29 (8H, m), 1.61 (2H, m), 2.30 (2H, t, 7.5)	0.89 (3H, t, 6.8), 1.30 (4H, m), 1.59[b] (2H), 2.30 (2H, t, 7.5)

no.	**6**	**7**	**8**	**9**	**10**
2	4.53 (d, 6.2)	5.02 (br s)	5.02 (br s)	3.87 (br d, 9.9)	3.71 (d, 9.9)
3α	2.07[b]				
3*β*	2.95 (dd, 13.3)	4.91[b]	4.88[b]	6.10 (d, 10.3)	5.59 (dd, 6.2, 12.1)
4α	5.09 (dd, 5.3, 13.2)	4.91 (d, 11.0)	4.88[b]	5.13 (br d, 10.3)	2.11 (m)
4*β*					3.02 (br dd, 6.2, 13.5)
6	5.47 (br d. 9.5)	5.52 (br d, 10.1)	5.53 (br d, 9.7)	5.51 (br d, 9.5)	5.40 (br d, 9.7)
7	5.79 (d, 9.5)	5.77 (d, 10.1)	5.78 (d, 9.7)	5.89 (d, 9.5)	5.62 (d, 9.7)
9	5.91 (d, 4.2)	5.76[b] (br s)	5.76 (3.3)	5.88[b] (br s)	5.82 (d, 2.2)
10	2.69 (d, 4.2)	2.81 (br s)	2.81 (br s)	2.65[b]	2.67[b]
12	4.71 (d, 6.2)	5.44 (m)	5.44 (br d, 5.5)	5.44 (m)	5.45 (br d, 4.0)
13	5.90 (dd, 6.2, 103)	2.04 (m)	2.04 (m)	2.11 (m)	2.07[b]
			2.21[b]	2.21 (m)	2.23 (m)
14	5.49 (d, 10.3)	4.73 (br s)	4.73 (m)	5.15 (br s)	5.20 (m)
15	1.19 (s)	1.16 (s)	1.16 (s)	0.84 (s)	0.86 (s)
16	2.16 (s)	2.19 (br s)	2.20 (br s)	2.06 (d, 1.5)	1.89 (br s)
18	1.68 (s)	1.64[b]	1.64 (s)	1.64 (s)	1.63 (s)
20	1.22 (br s)	1.86 (br s)	1.86 (br s)	1.89 (br s)	1.88 (br s)
*Me*CO	2.07, 2.07, 2.10, 2.25 (each s)	1.96, 2.15, 2.23 (each s)	1.96, 2.13, 2.16, 2.24 (each s)	2.02, 2.11, 2.21	2.03, 2.07, 2.14
$C_nH_{2n+1}CO$		0.87 (3H, m), 1.28 (8H, m), 1.64 (2H, m), 2.37 (2H, m)		0.88 (3H, t, 6.6), 1.28 (8H, m), 1.56 (2H, m), 2.28 (2H, m) 1.56 (2H, m), 2.28 (2H, m)	

[a] Chemical shift values are in ppm from TMS; multiplicities and *J* values are presented in parentheses. [b] Overlapped with other signals.

Table 2. ^{13}C NMR Data of Compounds **1**−**10**[a]

no.	1	2	3	4	5	6	7	8	9	10
1	47.0	47.1	48.6	46.9	46.7	46.9	45.4	45.4	45.7	45.7
2	76.7	76.7	76.2	77.6	78.0	77.6	71.8	71.8	72.2	71.7
3	70.7	71.3	70.9	38.5	38.2	38.5	70.8	70.7	72.2	72.0
4	76.0	76.8	74.6	72.0	69.4	72.0	76.6	76.9	76.5	34.4
5	140.3	141.1	140.8	144.8	146.5	144.7	142.1	142.1	141.0	140.3
6	125.3	124.2	123.9	122.7	124.0	122.8	123.5	123.6	123.7	120.4
7	73.2	73.6	73.5	73.5	73.4	73.5	73.7	73.7	73.8	74.8
8	71.5	71.2	71.5	71.2	71.0	71.2	70.4	70.4	71.0	71.1
9	65.1	65.4	65.1	65.3	65.7	65.3	67.7	67.6	67.6	68.0
10	43.6	43.7	44.7	43.8	43.3	43.8	44.0	44.0	45.1	44.4
11	72.6	73.7	72.4	72.1	73.6	72.5	133.1	133.0	133.3	133.4
12	73.2	70.2	73.4	72.5	70.4	73.2	120.9	120.9	121.2	120.1
13	123.2	125.1	121.0	122.6	124.9	122.6	25.9	25.9	26.2	26.3
14	140.1	138.0	142.1	140.5	138.4	140.5	73.0	73.0	74.1	74.2
15	15.5	15.5	14.1	15.5	15.1	15.4	15.0	15.1	13.1	13.3
16	25.5	25.5	26.0	25.6	65.8	25.7	24.9	25.0	25.2	27.2
17	64.7	64.5	64.8	64.7	64.3	64.7	63.3	63.3	64.1	64.0
18	9.8	9.6	9.6	9.7	9.7	9.6	9.5	9.5	9.9	9.8
19	170.5	170.7[b]	170.3	170.4	170.6	170.4	170.9	170.9	170.8	170.9
20	21.2	21.4	21.5	21.2	21.4	21.2	24.7	24.7	24.5	24.6
*Me*CO	20.9, 20.9, 21.1, 21.3	20.8, 21.1, 21.4	20.9, 21.4	20.9, 21.0, 21.3	21.2, 21.6	20.9, 21.0, 21.0, 21.6	20.8, 21.3, 21.3	20.8, 21.1, 21.3, 21.4	21.0, 21.1, 21.2	21.0, 21.2, 21.2
Me*C*O	168.7, 169.7, 169.9	168.4, 170.3,[b] 170.7	168.3, 169.6	168.2, 169.8, 170.0	168.1, 171.1	168.2, 169.8, 170.0, 170.0	168.8, 169.9, 170.9	168.9, 169.9, 170.6, 170.9	168.4, 170.0, 170.5	169.2, 169.6, 170.8
C_nH_{2n+1}− *C*O	14.1, 22.6 24.7, 28.8, 29.0, 31.6, 31.2, 172.7		13.6, 18.4 36.1, 173.5	14.0, 22.6, 24.8, 28.9, 29.0, 31.6, 34.2 172.9	13.8, 22.2, 24.5, 31.2, 34.2, 173.1		14.0, 22.6, 24.9, 28.9, 29.0, 31.6, 34.3, 173.5		14.1, 22.6, 24.7, 28.9, 29.0, 31.6, 34.2, 173.2	

[a] Chemical shift values for **1**, **2**, and **5**−**9** are in ppm from TMS (δ 0.00) and for **3** and **4** from $CDCl_3$ (δ 77.0), respectively. [b] These values are exchangeable.

and a methylene group at C-3 (δ 2.07−2.10, 1H, overlapped, 2.94−3.01, 1H, dd, J = 12.6−13.3, 13.3−14.7 Hz) on the basis of the chemical shifts and coupling patterns of the ^1H NMR and the NOE spectra as in the case of violides H, I, and N.[12,13]

The ^1H NMR spectrum of briarlide L (**4**), $C_{34}H_{48}O_{12}$, exhibited resonances due to three acetyl groups (δ 2.07, 2.11, 2.24, 3H each, s) and an *n*-octanoyl group (δ 0.88, 3H, t, J = 6.8 Hz, 1.29, 8H, m, 1.61, 2H, m, 2.30, 2H, t, J = 7.5 Hz) and was nearly identical to that of violide H (**14**), except for the presence of an additional acetyl group and the downfield shift of H-12 (δ 4.71, 1H, J = 6.4) by 1.03 ppm, when compared to that of **14**. The octanoyl group was elucidated to be positioned at C-4 by correlation of H-4 (δ 5.10, 1H, br dd, J = 5.3 and 13.3 Hz) to C-21 (δ_C 172.9, s) in the HMBC experiments. This implied that briarlide L was 12-acetylviolide H, the relative stereochemistry of which was also deduced by the NOE experiments: H-2/H-10, H-16, H-9/H-18, H-20, H-12/H-20.

Inspection of the ^1H NMR spectrum of briarlide M (**5**), $C_{30}H_{42}O_{12}$, indicated the presence of two acetyl groups (δ 2.14, 2.24, 3H each, s) and an *n*-hexanoyl group (δ 0.89, 3H, t, J = 6.8 Hz, 1.30, 4H, m, 1.59, 2H, overlapped, 2.30, 2H, t, J = 7.5 Hz). Comparison of the spectrum of **5** with that of violide I (**15**)[12] suggested that the C-5 methyl group in **15** was replaced with a hydroxymethyl group (δ 4.33, 2H, br s). The *n*-hexanoyl group was determined to be located at C-4 by correlation of H-4 (δ 5.01, 1H, dd, J = 5.1 and 12.6 Hz) to C-21 (δ_C 173.1) in the HMBC experiments. The relative stereochemistry was confirmed by the similarity of the ^1H NMR coupling patterns and the NOE experiments to those of **15**. Briarlide M, therefore, has the structure **5** as shown.

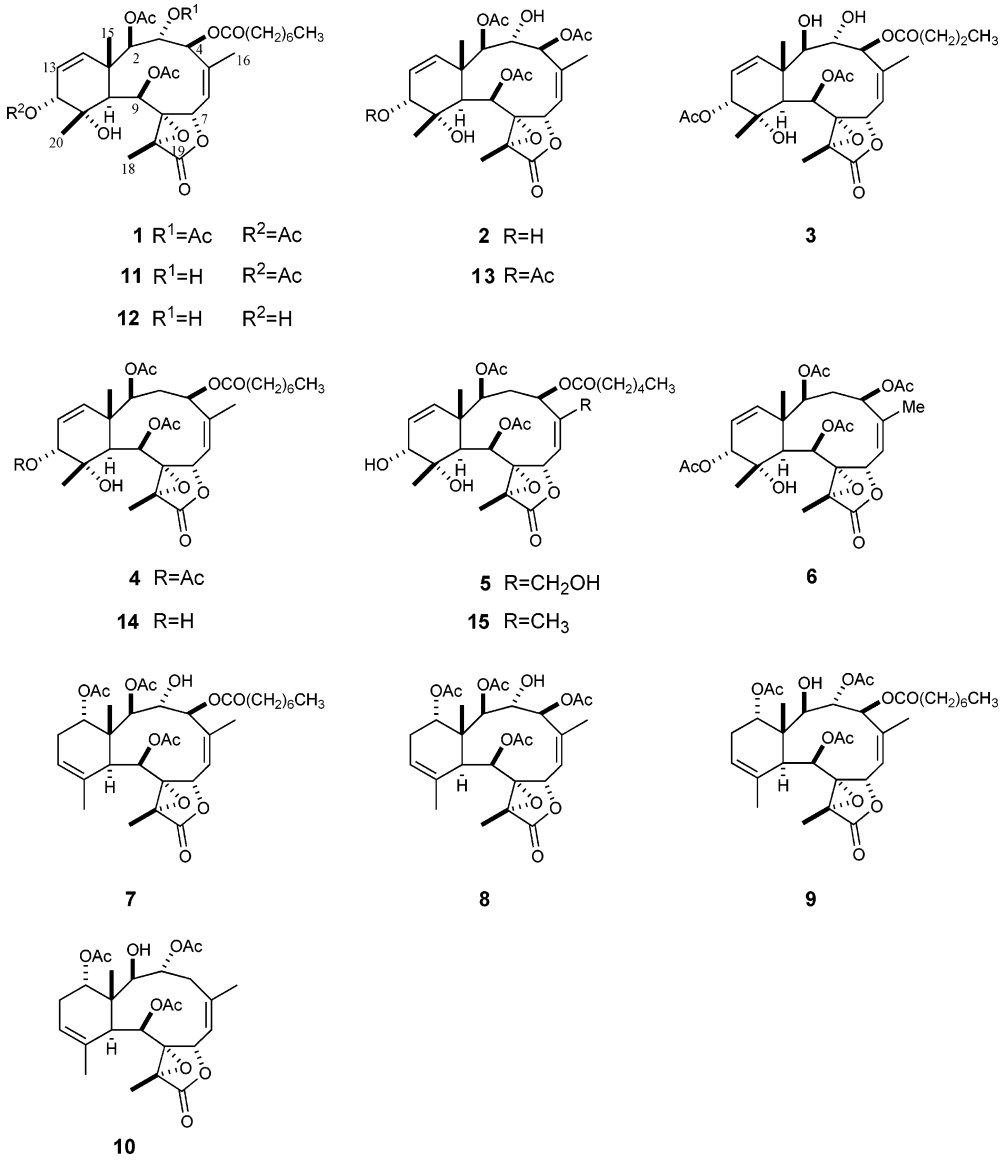
Briarlide N (**6**), $C_{28}H_{36}O_{12}$, showed resonances due to four acetyl protons (δ 2.07, 2.07, 2.10, 2.25, 3H each, s) in the ^1H NMR spectrum, which was similar to that of **4**; however, the resonances due to the *n*-octanoyl group in **4** were lacking and, instead, an acetyl group appeared. Thus, briarlide N was established to have the structure depicted in **6**.

Briarlides O−R (**7**−**10**) are briaranes containing a double bond between C-11 and C-12 and an acetyl group at C-14. In the NMR spectra, the presence of the moieties was established from the observation of the resonances due to quaternary carbons (δ_C 133.0−133.4, C-11), methines (δ_C 120.1−121.2, d, C-12, δ_H 5.44−5.45, 1H, H-12), and a proton carrying an acyl carbon (δ_H 4.73−5.20, H-14, δ_C 73.0−74.2, C-14). The position of the latter proton was determined to be H-14 by a correlation between H-14 and H-15 (δ 0.84−1.16, 3H, s) in the NOE experiments. Compounds **7**−**9** were also oxidized at the C-2, C-3, C-4, and C-9 positions as in the case of **1**−**3**, and compound **10** was oxidized at C-2, C-3, and C-9.

Briarlide O (**7**), $C_{34}H_{48}O_{12}$, was indicative of absorptions due to a hydroxyl group (ν_{max} 3515 cm^{-1}), a γ-lactone carbonyl (ν_{max} 1782 cm^{-1}), and an ester carbonyl (ν_{max} 1742 cm^{-1}) in the IR spectrum. In the ^1H NMR spectrum, resonances due to three acetyl protons (δ 1.96, 2.15, 2.23, 3H each, s) and *n*-octanoyl protons (δ 0.87, 3H, m, 1.28, 8H, m, 1.64, 2H, m, 2.37, 2H, m), three protons (δ 5.02, 1H, br s, H-2, 4.91, 1H, d, J = 11.0 Hz H-4, 4.73, 1H, m, H-14) bearing an acylated carbon, and a proton (δ 4.90, 1H, overlapped, H-3) bearing a hydroxyl group, as in the case of **2**, were observed. The *n*-octanoyl group was located at C-4, since H-4 showed an HMBC correlation to C-21 (δ_C 173.5, s). The relative stereochemistry was confirmed by the ^1H NMR coupling patterns and the NOE experiments: H-2/H-10, H-3/H-7, H-9/H-18, H-20, H-14/H-15. Therefore, the structure of briarlide O was as shown.

The ^1H NMR spectrum of briarlide P (**8**), $C_{28}H_{36}O_{12}$, indicated the presence of four acetyl protons (δ 1.96, 2.13, 2.16, 2.24, 3H each, s); however, it was nearly identical to

Chart 1



that of **7**. The only difference was that the *n*-octanoyl group in **7** was replaced by an acetyl group. Therefore, the structure of **8** could be assigned to briarlide P.

Briarlide Q (**9**), $C_{34}H_{48}O_{12}$, was isomeric with **7**. The ^{1}H NMR spectrum was similar to that of **7**, except that the chemical shifts of H-2 (δ 3.87, 1H, br d, J = 9.9 Hz) and H-3 (δ 6.10, 1H, d, J = 10.3 Hz) were shifted upfield by 1.15 ppm and downfield by 1.20 ppm, respectively, when compared with those of **7**. This suggested that C-2 was hydroxylated and C-3 was acylated. The location of the hydroxyl group at C-2 was also supported by the fact that the chemical shift of H-14 (δ 5.15, 1H, br s) was shifted downfield by 0.42 ppm in comparison with that of **7**. This shift was due to anisotropic deshielding by the C-2 hydroxyl group. The *n*-octanoyl group was deduced to be positioned at C-4 from a correlation of H-4 (δ 5.13, 1H, br d, J = 10.3 Hz) to C-21 (δ_C 173.2, s) in the HMBC experiments. On the basis of the coupling patterns and the NOE correlations, the relative stereochemistry was determined as depicted in **9**.

By comparing the ^{1}H NMR spectrum of briarlide R (**10**), $C_{26}H_{34}O_{10}$, with those of **7**−**9**, H-6 (δ 5.40, 1H, br d, J = 9.7 Hz), H-7 (δ 5.62, 1H, d, J = 9.7 Hz), H-9 (δ 5.82, 1H, d, J = 2.2 Hz), and H-10 (δ 2.67, 1H, overlapped) in the 10-membered ring could be readily assigned. A double-doublet at δ 5.59 (1H, J = 6.2, 12.1 Hz), which could be assigned to H-3 on the basis of an NOE correlation with H-7, was coupled to C-4 methylene protons (δ 2.11, 1H, m, 3.02, 1H, br dd, J = 6.2, 13.5 Hz). The proton at δ 3.71 (1H, d, J = 9.9 Hz) being coupled to a hydroxyl proton (δ 2.66, 1H, d, J = 9.9 Hz), which showed an NOE correlation with H-10, was established to be H-2. The chemical shift and the coupling pattern (doublet) indicated that a hydroxyl group was attached to C-2. Therefore, briarlide R was confirmed to have structure **10**.

Briaranes possessing a 11,12-double bond and an 14-acetoxyl group like briarlides O−R have not been so often encountered.[14] Bioactivity tests for the new compouds could not be performed because of their insufficient amount.

Experimental Section

General Experimental Procedures. Optical rotations were measured at 22 °C on a JASCO DIP-370S polarimeter. IR spectra were recorded on a MASCO FT/IR 5300. NMR spectra were recorded with 400 MHz JEOL NMR instruments using TMS as internal standard and $CDCl_3$ as solvent. MS spectra were obtained with a JEOL JMS XD-303 instrument.

Animal Material. The *Briareum* sp. (collection no. 262) was collected at −2 m at Amami Island, Kagoshima Prefecture, and was frozen immediately after collection. The animal was compared to the type material of *Briareum* sp., and the characteristics were found to match. A voucher specimen has been deposited at Faculty of Science, Kagoshima University.

Extraction and Isolation. The organism (wet wt, 1.7 kg) was chopped into small pieces and extracted with MeOH (20 L). The MeOH extract was suspended in H_2O and extracted with CH_2Cl_2. A portion (5.2 g) of the CH_2Cl_2 extract (15.4 g) was absorbed on silica gel and subjected to chromatography on silica gel (40 g) packed in hexane, fractions (100 mL) being collected as follows: 1, 2 (hexane−CH_2Cl_2, 1:4), 3, 4 (CH_2Cl_2), 5, 6 (MeOH−CH_2Cl_2, 1:48), 7−11 (MeOH−CH_2Cl_2, 1:19), 12, 13 (MeOH−CH_2Cl_2, 1:9), 14−17 (MeOH−CH_2Cl_2, 1:4), and 18, 19 (MeOH). Fractions 5−12 (4.36 g) were chromatographed on silica gel using MeOH and CH_2Cl_2, increasing the proportion of MeOH to elute the fractions from the column. Elution with MeOH−CH_2Cl_2 (1:49) gave a fraction (2.5 g). The fraction was again chromatographed on silica gel using MeOH−CH_2Cl_2 and then applied to HPLC (ODS) with CH_3CN−H_2O (7:3 to 2:3) to afford **1** (1.2 mg), **6** (1.7 mg), **7** (9.8 mg), **8** (17.0 mg), and **9** (1.6 mg). Elution with MeOH−CH_2Cl_2 (1:24) gave a crude, which was applied to HPLC with CH_3CN−H_2O (5:10) to yield **2** (0.9 mg).

The remaining portion (9.9 g) of the CH_2Cl_2 extract was subjected to chromatography on silica gel (80 g) in the same way as above. Fractions 5−13 (7.3 g) eluted with MeOH−CH_2Cl_2 (1:49 to 1:9) were chromatographed using MeOH and CH_2Cl_2, increasing the proportion of MeOH to elute the fractions from the column. Compounds **4** (1.7 mg) and **10** (1.4 mg) were isolated from the fractions eluted with MeOH−CH_2Cl_2 (1:49) followed by HPLC (ODS) with CH_3CN−H_2O (9:10) and MeOH−H_2O (4:1), respectively. Elution with MeOH−CH_2Cl_2 (1:24) followed by HPLC with CH_3CN−H_2O (10:9) afforded **3** (2.8 mg) and **5** (1.3 mg).

Briarlide I (1): amorphous, $[\alpha]_D$ +27° (*c* 0.06, MeOH); IR (film) ν_{max} 3538, 1788, 1746, 1221 cm^{-1}; ^{1}H NMR (see Table 1); ^{13}C NMR (see Table 2); positive-ion HREIMS *m/z* 707.3275 $[M + H]^+$ (calcd for $C_{36}H_{51}O_{14}$, 707.3279).

Briarlide J (2): amorphous, $[\alpha]_D$ +13° (*c* 0.07, MeOH); IR (film) ν_{max} 3503, 1782, 1740, 1215 cm^{-1}; ^{1}H NMR (see Table 1); ^{13}C NMR (see Table 2); positive-ion HREIMS *m/z* 539.2102 $[M + H]^+$ (calcd for $C_{26}H_{35}O_{12}$, 539.2128).

Briarlide K (3): amorphous, $[\alpha]_D$ −74° (*c* 0.14, MeOH); IR (film) ν_{max} 3549, 1784, 1744, 1238, 1213 cm^{-1}; ^{1}H NMR (see Table 1); ^{13}C NMR (see Table 2); positive-ion HREIMS *m/z* 567.2461 $[M + H]^+$ (calcd for $C_{28}H_{39}O_{12}$, 567.2442).

Briarlide L (4): amorphous, $[\alpha]_D$ −45° (*c* 0.07, MeOH); IR (film) ν_{max} 3549, 1784, 1744, 1238, 1213 cm^{-1}; ^{1}H NMR (see Table 1); ^{13}C NMR (see Table 2); positive-ion HREIMS *m/z* 649.3221 $[M + H]^+$ (calcd for $C_{34}H_{49}O_{12}$, 649.3224).

Briarlide M (5): amorphous, $[\alpha]_D$ +52° (*c* 0.06, MeOH); IR (film) ν_{max} 3420, 1782, 1738, 1213 cm^{-1}; ^{1}H NMR (see Table 1); ^{13}C NMR (see Table 2); positive-ion HREIMS *m/z* 595.2759 $[M + H]^+$ (calcd for $C_{30}H_{43}O_{12}$, 595.2755).

Briarlide N (6): amorphous, $[\alpha]_D$ −83° (*c* 0.07, MeOH); IR (film) ν_{max} 3547, 1784, 1744, 1236 cm^{-1}; ^{1}H NMR (see Table 1); ^{13}C NMR (see Table 2); positive-ion HREIMS *m/z* 565.2275 $[M + H]^+$ (calcd for $C_{28}H_{37}O_{12}$, 565.2285).

Briarlide O (7): amorphous, $[\alpha]_D$ −106° (*c* 0.12, MeOH); IR (film) ν_{max} 3515, 1782, 1742, 1248, 1213 cm^{-1}; ^{1}H NMR (see Table 1); ^{13}C NMR (see Table 2); positive-ion HREIMS *m/z* 649.3228 $[M + H]^+$ (calcd for $C_{34}H_{49}O_{12}$, 649.3224).

Briarlide P (8): amorphous, $[\alpha]_D$ +49° (*c* 0.39, MeOH); IR (film) ν_{max} 3504, 1782, 1742, 1248 cm^{-1}; ^{1}H NMR (see Table 1); ^{13}C NMR (see Table 2); positive-ion HREIMS *m/z* 587.2108 $[M + Na]^+$ (calcd for $C_{28}H_{36}O_{12}Na$, 587.2104).

Briarlide Q (9): amorphous, $[\alpha]_D$ −50° (*c* 0.08, MeOH); IR (film) ν_{max} 3522, 1786, 1745, 1215 cm^{-1}; ^{1}H NMR (see Table 1); ^{13}C NMR (see Table 2); positive-ion HREIMS *m/z* 649.3215 $[M + H]^+$ (calcd for $C_{34}H_{49}O_{12}$, 649.3224).

Briarlide R (10): amorphous, $[\alpha]_D$ +120° (*c* 0.06, MeOH); IR (film) ν_{max} 3526, 1784, 1732, 1242, 1215 cm^{-1}; ^{1}H NMR (see Table 1); ^{13}C NMR (see Table 2); positive-ion HREIMS *m/z* 507.220 $[M + Na]^+$ (calcd for $C_{26}H_{35}O_{10}$, 507.2230).

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