SUPPLEMENTARY MATERIAL

Two Pentasaccharide resin glycosides from *Argyreia acuta*

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Abstract

Two new compounds of acutacoside **1** – **2**, pentasaccharide resin glycosides were isolated from the aerial parts of *Argyreia acuta*. The core of the two compounds was operculinic acid A, and they were esterified at the same position, just one substituent group was linked at C-2 of Rha., The absolute configuration of the aglycone in the two compounds were established by Mosher's method, which was (11*S*)-hydroxyhexadecanoic acid (jalapinolic acid). Their structures were established by a combination of spectroscopic and chemical methods.

Keywords: resin glycoside; operculinic acid A; *Argyreia acuta*

Table S1. ^1H (500 MHz) and ^{13}C -NMR (125 MHz) Spectral Data of **1** and **2** in $\text{C}_5\text{D}_5\text{N}$

Position		1		2	
		^{13}C NMR	^1H NMR	^{13}C NMR	^1H NMR
Fuc	1	104.6	4.74 d (7.4)	104.6	4.74 d (7.4)
	2	80.2	4.15 dd (7.4, 9.4)	80.2	4.15 dd (7.4, 9.4)
	3	73.2	4.09 dd (9.4, 3.0)	73.2	4.09 dd (9.4, 3.0)
	4	72.1	3.96 d (3.0)	72.1	3.96 d (3.0)
	5	71.1	3.74 br q (6.6)	71.1	3.74 br q (6.6)
	6	17.6	1.50 d (6.3)	17.6	1.50 d (6.3)
Rha	1	98.9	5.52 br s	98.8	5.52 br s
	2	73.6	5.93 br s	73.6	5.93 br s
	3	69.2	5.03 dd (3.3, 9.3)	69.2	5.03 dd (3.3, 9.3)
	4	82.5	4.18 dd (9.3, 9.3)	82.5	4.18 dd (9.3, 9.3)
	5	68.7	4.37 dd (9.3, 5.1)	68.7	4.37 dd (9.3, 5.1)
	6	19.4	1.63 d (5.1)	19.4	1.63 d (5.1)
Rha	1	100.6	5.84 br s	100.6	5.84 br s
	2	73.9	6.33 br s	73.9	6.33 br s
	3	79.3	4.79 dd (2.9, 9.2)	79.3	4.79 dd (2.9, 9.2)
	4	80.1	4.32 dd (9.2, 9.2)	80.1	4.32 dd (9.2, 9.2)
	5	68.4	4.50 dd (9.2, 6.5)	68.4	4.50 dd (9.2, 6.5)
	6	19.3	1.65 d (6.5)	19.3	1.65 d (6.5)
Rha	1	103.6	6.27 br s	103.6	6.27 br s
	2	69.5	5.26 br s	69.5	5.26 br s
	3	72.0	6.01 dd (3.1, 10.0)	72.0	6.01 dd (3.1, 10.0)
	4	71.8	6.09 dd (10.0, 10.0)	71.8	6.09 dd (10.0, 10.0)
	5	70.2	4.48 dd (10.0, 6.2)	70.2	4.48 dd (10.0, 6.2)
	6	18.2	1.43 d (6.2)	18.2	1.43 d (6.2)
Glc	1	105.8	5.09 d (7.5)	105.8	5.09 d (7.5)
	2	75.4	3.99 dd (7.5, 9.0)	75.4	3.99 dd (7.5, 9.0)
	3	78.7	4.08 dd (9.0, 9.0)	78.7	4.08 dd (9.0, 9.0)
	4	68.7	3.93 dd (9.0, 9.0)	68.7	3.93 dd (9.0, 9.0)
	5	78.4	3.81 ddd (2.6, 5.8, 9.0)	78.4	3.81 ddd (2.6, 5.8, 9.0)
	6	63.2	4.09 dd (5.8, 11.7)	63.2	4.09 dd (5.8, 11.7)
Ag			4.43 dd (2.6, 9.0)		4.43 dd (2.6, 9.0)
	1	173.4		173.4	
	2	33.5	2.28 m	33.5	2.28 m
			2.44 m		2.44 m
	11	82.6	3.83 m	82.6	3.83 m
	16	14.6	0.86 t (7.4)	14.6	0.86 t (7.4)
Cna	1	166.8		166.8	
	2	118.8	6.60 d (16.0)	118.8	6.60 d (16.0)
	3	145.7	7.87 d (16.0)	145.7	7.87 d (16.0)
	1	135.0		135.0	
	2 and 6	128.8	7.45 m	128.8	7.45 m
	3 and 5	129.6	7.35 m	129.6	7.38 m
Deca	4	131.1	7.35 m	131.1	7.38 m
	1	173.8			
	2	34.8	2.32 t (7.3)		
Dodeca	12	14.6	0.83 t (6.9)		
				173.8	
				34.8	2.32 t (7.3)

				14.6	0.83 t (6.9)
Mba	1	176.3		176.3	
	2	41.8	2.48 m	41.9	2.48 m
	2-CH ₃	12.1	1.15 t (7.4)	12.1	1.15 t (7.4)
	4	17.2	0.81 d (7.0)	17.2	0.81 d (7.0)

^aChemical shifts (δ) are in ppm relative to TMS. The spin coupling (J) is given in parentheses (Hz). Chemical shifts marked with an asterisk (*) indicate overlapped signals. Spin-coupled patterns are designated as follows: s = singlet, br s = broad singlet, d = doublet, t=triplet, m = multiplet, q = quartet. All assignments are based on ¹H-¹H TOCSY experiments. ^bAbbreviations: Fuc = fucose; Rha = rhamnose; Ag = 11- hydroxyhexadecanoyl; Cna = *trans*-cinnamoyl; Deca = *n*-decanoyl; Dodeca = *n*-dodecanoyl; Mba = (*S*)-2-methylbutanoyl.

Figure S1. Key HMBCs from H to C for Acutacoside (**1**)

Figure S2. The UV spectrum compound **1**

Figure S3. The IR spectrum compound **1**

Figure S4. The HRTOFMS spectrum compound **1**

Figure S5. The ¹H-NMR spectrum compound **1**

Figure S6. The ^{13}C -NMR spectrum compound **1**

Figure S7. The TOCSY spectrum compound **1**

Figure S8. The HSQC spectrum compound **1**

Figure S9. The HMBC spectrum compound **1**

Figure S10. The UV spectrum compound **2**

Figure S11. The IR spectrum compound **2**

Figure S12. The HRTOFMS spectrum compound 2

Figure S13. The ¹H-NMR spectrum compound 2

Figure S15. The TOCSY spectrum compound **2**

Figure S16. The HSQC spectrum compound **2**

Figure S17. The HMBC spectrum compound **2**