

ANTHRAQUINOIDS FROM *CASSIA NOMAME*¹

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In continuation of our chemical investigation of the *Cassia* genus (Leguminosae), we report the isolation of anthraquinoids from the seeds and the aerial parts in *Cassia nomame* Honda. From the seeds, physcion (1), physcion-9-anthrone (1), emodin 9-anthrone (2), and physcion-10,10'-bianthrone (1) were isolated, whereas three anthraquinones, chrysophanol (2), physcion, and emodin (2) were obtained from aerial parts.

Chrysophanol and chrysophanol-anthrone were not found in the seeds.

EXPERIMENTAL

PLANT MATERIAL.—Seeds and aerial parts of *C. nomame* were obtained from the Drug Plant Garden of the College of Science and Technology, Nihon University. A voucher specimen was deposited in the Herbarium of the Department of Pharmacy, College of Science and Technology, Nihon University.

EXTRACTION AND ISOLATION.—To powdered seeds (500 g) of *C. nomame*, H₂O (500 ml) was added, and then the mixture was extracted with C₆H₆. The extract was worked up by standard procedures (1-3). The compounds obtained from the seeds were physcion (14 mg), physcion-9-anthrone (22 mg), emodin (5 mg), emodin-9-anthrone (40 mg), and physcion-10,10'-bianthrone (29 mg).

Dried aerial parts (7.0 kg) of *C. nomame* were extracted with 90% MeOH and the extract was concentrated, which was then dissolved in H₂O and extracted with C₆H₆. The extract yielded chrysophanol (4 mg), physcion (4 mg), and emodin (1 mg).

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ISOFLAVONES FROM *IRIS HOOKERIANA*

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As a part of our program on phytochemical investigations of the plants in this region that are used in folk medicine, we report here the identification of four isoflavones from *Iris hookeriana* Foster (Iridaceae).

EXPERIMENTAL

EXTRACTION.—The air-dried and chopped rhizomes (2 kg) of *I. hookeriana*, collected from the Sonamarg region of the Kashmir Valley in late October (Voucher 8620 deposited at the Herbarium of University of Kashmir), were extracted with MeOH after defatting. Workup of the MeOH extract and separation through chromatographic methods afforded four isoflavones: irisfloreantin (100 mg), irigenin (200 mg), junipigenin-A (150 mg), and iridin (110 g).

¹Part 19 in the series "Studies on the Constituents of Purgative Crude Drugs." For Part 18, see S. Kitanaka, A. Matuura, M. Takido, H. Shirai, and K. Kagei, *Shoyakugaku Zasshi*, **39**, 106 (1985).

IDENTIFICATION.—Identification of the compounds was made on the basis of spectral and chemical data as well as by comparison with authentic samples (1-7). ^{13}C -nmr spectra of the compounds isolated are reported here for the first time (Table 1). ^{13}C -nmr chemical shifts are in agreement with the values reported for isoflavones (8, 9). Full details of the isolation and identification are available on request to the senior author.

TABLE 1. ^{13}C -nmr Spectral Data (Shift in ppm Downfield from TMS)

Carbon number	Irisfloreintin (CDCl_3)	Irigenin ($\text{DMSO}-d_6$)	Junipigenin-A ($\text{DMSO}-d_6$)	Iridin ($\text{DMSO}-d_6$)	Sugar carbons
2	153.19	154.6	155.84	155.35	
3	127.51	122.0	122.42	125.57	
4	175.51	180.25	174.62	180.25	
5	152.98	153.25	154.54	152.96	
6	150.81	131.43	99.04	132.60	
7	150.46	152.85	154.13	152.96	
8	93.24	93.88	93.71	94.14	
9	154.69	157.79	157.48	156.67	
10	106.97	104.79	104.50	106.61	
1'	125.66	121.75	125.83	122.09	
2'	113.33	110.40	108.40	110.41	
3'	141.80	152.59	150.37	152.40	
4'	135.66	136.48	135.60	136.53	
5'	138.39	150.22	150.37	150.37	
6'	113.82	104.69	108.37	104.65	
OCH_3	61.24	59.80	59.73	60.36	
	60.82	59.88		60.01	
	56.35	55.81		55.88	
	56.07				
$\text{O}-\text{CH}_2-\text{O}$	102.3				
C-1					100.26
C-2					76.7
C-3					77.3
C-4					69.7
C-5					73.2
C-6					60.76

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