Chinese Chemical Letters Vol. 14, No. 3, pp 274 – 275, 2003
http://www.imm.ac.cn/journal/ccl.html

A New Compound from *Chaenomeles sinensis* (Thouin) Koehne

Hui Yuan GAO[1], Li Jun WU[1]*, Masanori KUROYANAGI[2]

[1]Department of Natural Products Chemistry, Shenyang Pharmaceutical University, Shenyang 110016
[2]School of Bioresources, Hiroshima Prefectural University, 562 Nanatsukacho, Shobara, Hiroshima 727-0023 Japan

Abstract: A new dihydrochromone derivative, named chaenomone, was isolated from the twigs of *Chaenomeles sinensis* (Thouin) Koehne. The structure was determined by spectroscopic methods.

Keywords: Chaenomone, *Chaenomeles sinensis*, Rosaceae, twigs.

Chaenomeles sinensis (Thouin) Koehne (Rosaceae) is a special woody plant of eastern Asia, and distributes widely in China and Japan. According to the modern research, it shows the activity against pneumonia, pulmonary tuberculosis, cholera and so on[1]. In the course of our study, EtOAc soluble fraction of twigs of it showed a significant inhibition on the tumor promotion. By the HPLC techniques, a new 2-substituted dihydrochromone derivative, named chaenomone (**1**) was isolated from the active part.

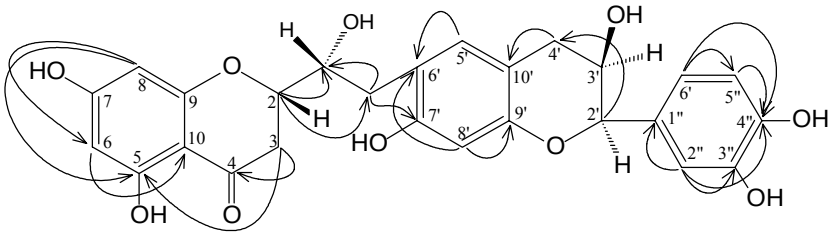
Compound **1** was yellow amorphous powder, mp>300°C (MeOH), $[\alpha]_D^{21}$ +115 (*c* = 0.048, MeOH). The molecular formula of $C_{26}H_{24}O_{10}$ was determined on the basis of FABMS (*m/z* 497$[M+H]^+$) together with ^{13}CNMR and ^{1}HNMR spectra data **(Table 1)**. The ^{13}CNMR spectrum showed 26 carbon signals, consisting of a conjugated carboxyl, eighteen olefinic, four carbinyl and three alkyl carbons. The ^{1}HNMR spectrum exhibited signals for a pair of meta-coupled aromatic protons (δ_H 5.91, d; 5.95, d, each 1H *J* = 2.0 Hz), a pair of para-coupled aromatic protons (δ_H 6.55, br s; 6.15, br s each 1H), and three hydrogen signals with an ABX coupling system [δ_H 7.04(1H, d, *J* = 2.0 Hz), 6.86(1H, dd, *J* = 8.5, 2.0 Hz), 6.81(1H, d, *J* = 8.5 Hz)] of a benzene ring. By HMQC spectrum, the direct connections between protons and carbons were identified. Compared the data with that of parts of known compounds[2-3], the structure of **1** was presumed to be a dihydrochromone derivative with an alkyl group and a flavane residue. Further determination was carried out by HMBC and ^{1}H-^{1}H COSY **(Table 1)**.

Table 1 ^{1}H, ^{13}C NMR data HMBC and main ^{1}H-^{1}H COSY correlation of **1***

No. C	δ_C	δ_H (*J*, Hz)	C long range correlated with the H (HMBC)	^1H-^1H COSY
2	73.0	3.86 br s	C-3, α, β	H-3, α
3	40.9	2.19 d (11.5), 2.96 d(11.5)	C-2, 4, 5, β, 8′	H-2
4	193.7			
5	164.7			
6	96.6	5.91 d (2.0)	C-5, 7, 8, 10	H-8
7	157.8			
8	95.4	5.95 d (2.0)	C-7, 9, 10	H-6
9	155.7			
10	98.8			
α	65.1	4.47 m	C-β, 2, 10	H-2, β
β	25.0	2.66 dd (17.0, 5.0), 2.84 dd (17.0, 1.5)	C-2, α, 10, 7′ ,8′	H-α
2′	80.9	5.06 s	C-4', 1″, 2″, 6″	H-3′
3′	66.5	4.30 m		H-2′
4′	29.5	2.90 dd (17.0, 4.5), 2.81 dd (17.0, 1.5)	C-2′, 3′, 6′	
5′	113.3	6.55 s	C-6′, 8′	
6′	104.5			
7′	166.6			
8′	91.8	6.15 s	C-5′, 6′, 7′, 9′, 10′	
9′	156.3			
10′	103.7			
1″	131.2			
2″	115.1	7.04 d (2.0)	C-3″, 4″, 5″, 6″	H-6″
3″	146.1			
4″	146.2			
5″	116.1	6.81 d (8.5)	C-1″, 3″, 4″	H-6″
6″	119.2	6.86 dd (8.5, 2.0)	C-2″, 3″, 4″	H-2″,5′ ′

* ^1H: 500MHz and ^{13}C: 125 MHz in CD_3OD

Figure 1 The structure and HMBC correlation of compound **1**



References

1. *Zhong Hua Ben Cao*, Shanghai Scientific Technique Publishing house, Shanghai, **1999**, 4th p. 113.
2. I. Szilagi, *et al. Planta Med*., **1981**, *43*, 121.
3. K. R. Markham, B.Ternai *Tetrahedron,* **1976**, *32*, 2607.

Received 29 April, 2002