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Lepida Acid A from Basidiomycetes *Russula lepida*

Jian Wen TAN[2], Ji Kai LIU[1]*, Ze Jun DONG[1], Pei Gui LIU[1], Da Gan JI[1]

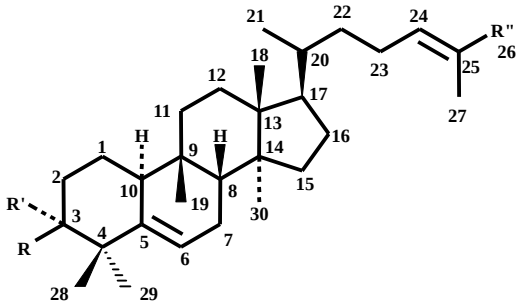
[1]Kunming Institute of Botany, The Chinese Academy of Sciences, Kunming 650204
[2]Department of Chemistry, Zhongshan University, Guangzhou 510275

Abstract: A new compound, lepida acid A **1**, has been isolated from the fruiting bodies of Basidiomycetes *Russula lepida*. Its structure was elucidated by spectral methods.

Keywords: *Russula lepida* Fr, lepida acid a, basidiomycetes, cucurbitacin triterpenoid.

Russula lepida Fr. has been used as food and medicinal agents in China. The extract of its fruiting bodies showed anti-tumor activity[1]. As part of our study on the active principles of higher fungi in Yunnan, we investigated the chemical constituents of *R. lepida* collected at the Ailao Mountain in Yunnan. This report describes the structural elucidation of a new compound, lepida acid A **1**, from the EtOH and $CHCl_3$-CH_3OH (1:1) extract of the fruiting bodies of *R. lepida*.

The chloroform fraction of the EtOH and $CHCl_3$-CH_3OH (1:1) extract from the fruiting bodies of *R. lepida* was subjected to repeated chromatography to afford lepida acid A **1** as colorless crystals, $[\alpha]_{20}^{D}$ + 37.68 (c 0.345, $CHCl_3$), m.p. 229.5~231.5 °C. Its IR spectrum revealed the absorption hydroxyl group at 3507 cm^{-1}, carboxylic group at 3400~3200, 1687cm $^{-1}$ and double bond at 1642 cm^{-1}. The mass spectrum exhibited molecular ion peak at m/z 456 and characteristic fragment ions at m/z 304, 152 and 134 due to RDA[5]. The signals in the ^{1}H NMR spectrum of **1** at δ 6.89, 5.59 and 3.49 were assigned to two trisubstituted olefinic protons and an oxymethine, respectively. Thirty signals in the ^{13}C NMR (DEPT) spectrum of **1** were recognized (7xC, 7xCH, 9xCH_2, 7xCH_3) in which a carboxyl, an oxymethine, two olefinic methines, two olefinic quaternary carbons were provided. These data and literature precedents suggested that **1** is a triterpenoid based on the cucurbitacin skeleton[2-5] with the molecular formula $C_{30}H_{48}O_3$. Compound **1** and 10α-cucurbitadienol **3** were found to have the same A and B ring moiety by comparing their NMR data[4]. The NMR data of C-12 to C-28 of **1** were consistent with rosacea acid B **2**, it indicated that these two compounds have the same C, D ring and side chain moiety[5]. The above evidence led to the establishment of the structure of this compound as **1**.



Lepida acid A 1	R=OH,	R′=H,	R″=COC
Rosacea acid 2	R=H,	R′=OH,	R″=COC
10-Cucurbitadienol 3	R=OH,	R′=H,	R″=CH_3

Table 1. ^{1}H and ^{13}C NMR (DEPT) data for lepida acid A 1 (all in $CDCl_3$, δ PPM)

No.C	**1**		**2**	**3**	No.C	**1**		**2**	**3**
	^{13}C	^{1}H	^{13}C	^{13}C		^{13}C	^{1}H	^{13}C	^{13}C
1	21.1	1.53, 1.53	20.1	21.1	16	27.9	1.88, 2.10	27.9	30.5
2	28.9	1.71, 1.87	30.5	28.9	17	50.4	1.51	50.6	50.4
3	76.7	3.49 (bs)	77.4	76.6	18	15.4	0.85	15.4	15.4
4	41.4		42.0	41.4	19	28.0	0.92	28.0	28.0
5	141.2		143.8	141.2	20	35.9	1.47	35.8	35.9
6	121.4	5.59 (bd, 5.2)	119.1	121.4	21	18.6	0.93(d, 6.2)	18.0	18.6
7	24.4	1.81, 2.39	24.4	24.3	22	34.9	1.12, 1.44	34.8	36.4
8	43.7	1.79	43.6	43.6	23	25.8	2.11, 2.25	25.9	24.8
9	34.5		34.7	34.4	24	145.6	6.89(t, 7.4)	145.6	125.2
10	37.9	2.29	35.9	37.8	25	126.7		126.5	130.9
11	32.3	1.43, 1.71	32.3	32.3	26	172.9		172.6	25.7
12	34.9	1.50, 1.77	34.9	34.7	27	11.9	1.85	12.0	17.6
13	46.4		46.4	46.2	28	25.4	1.02	24.4	25.4
14	49.2		49.2	49.1	29	27.2	1.14	20.0	27.2
15	30.5	1.16, 1.21	31.0	30.4	30	17.8	0.81	18.5	17.8

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