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A New Azafluorenone Alkaloid from *Alphonsea monogyma*

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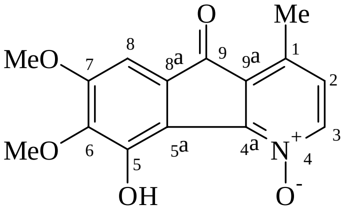
Abstract: A new azafluorenone (onychine) alkaloid, 6,7-dimethoxy-5-hydroxy onychine N-oxide, was isolated from the stem and branch of *Alphonsea monogyma*. Its structure was established on the basis of spectral and chemical analysis.

Keywords: *Alphonsea monogyma*, 6,7-dimethoxy-5-hydroxy-onychine N-oxide.

The genus *Alphonsea* (Annonaceae) comprises about thirty species growing in tropical or subtropical area in Asia, of which six species were found in China. *Alphonsea monogyma*, distributed in the southern area of China, is an ever green tree. No previous chemical investigation has been reported on this species. Up to now, only three species of this genus have been studied chemically, they mainly contained alkaloids, furanic diacetylenes and lignans[1-2]. A series of onychine and oxoaporphine alkaloids were isolated from the stem and branch of *Alphonsea monogyma*. The present paper reports the structural elucidation of a new compound, 6,7-dimethoxy-5-hydroxy-onychine N-oxide. The 17th natural onychine alkloids thus known are restrictly to the plant family Annonaceae[3-5].



6,7-dimethoxy-5-hydroxy-onychine N-oxide, orange-red needles, mp 287-288℃, showed positive reaction to alkaloid test on TLC. HREIMS showed a molecular formula of $C_{15}H_{13}O_5N$. UV λ max (log ε): 215 (4.09), 240 (4.03), 272 (4.33), 299 (4.02), 310sh (4.00) reveal an onychine skeleton, which was confirmed by the typical methyl signal at δ 2.62 and a pair of doublets at δ 6.89 (J=6.0Hz) and δ 7.91 (J=6.0Hz) in the ^{1}HNMR spectrum. Two methoxys (δ 4.02 and δ 3.97) were revealed according to the ^{1}HNMR data, but the locations of these groups remained to be determined.

Table1. ^{1}HNMR and ^{13}CNMR data of 6,7-dimethoxy-5-hydroxy-onychine N-oxide (300MHz, $CDCl_3$)

position	δ H (J in Hz)	δ (C)	position	δ H (J in Hz)	δ (C)
1		143.1	8	6.92,s	101.4
2	6.89(d,6.0)	126.6	8a		129.4
3	7.91(d,6.0)	141.0	9		188.5
4			9a		128.4
4a		150.1	Me-1	2.62,s	16.6
5		152.9	MeO-6	4.02,s	60.7
5a		115.3	MeO-7	3.97,s	56.5
6		144.0			
7		157.5			

A HMBC spectrum was run to establish the substituted locations. From the spectrum, the proton signal at δ 6.92 was related to C-9, which suggested a proton at C-8. The carbon signals at δ 144.0 and δ 157.5 were not only correlated to the methoxyl proton signals at δ 4.02 and δ 3.97 respectively, but also correlated to signal of H-8. So the 6,7-dimethoxy-5-hydroxy substitute pattern was determined. The peak of $[M-16]^+$ and $[M-17]^+$ appeared in the EIMS spectrum. The reductive reaction of this compound with zinc powder and 10% HCl give 6,7-dimethoxy-5-hydroxy-onychine. The chemical structure for the new alkaloid is established as 6,7-dimethoxy-5-hydroxy-onychine N-oxide and the proton signals and carbon signals were assigned in **Table 1**.

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