

(3H, s, 4'-OCH₃), 6. 10(2H, s, -O-CH₂-O-), ¹³CNMR(125 MHz, CDCl₃) δ 154. 9(C-1), 140. 3(C-3), 121. 5(C-4), 133. 0(C-4a), 102. 2(C-5), 149. 2(C-6), 148. 4(C-7), 102. 7(C-8), 123. 9(C-8a), 130. 4(C-1'), 133. 1(C-2'), 113. 7(C-3'), 163. 5(C-4'), 113. 7(C-5'), 133. 1(C-6'), 55. 5(4', -OCH₃), 101. 8(-O-CH₂-O-), 186. 0(C=O) 碳谱数据与文献^[7]记载的(6, 7-亚甲二甲氧基异喹啉基)-(4'-甲氧基苯基)甲酮 [(6, 7-methylenedioxyisoquinoliny)-(4'-methoxyphenyl) methanone] 基本一致

化合物IV: 浅黄色片晶, mp 194℃~ 196℃。与对照品 vanillic acid 共薄层, R_f值一致; IR谱与对照品 vanillic acid 的标准红外光谱基本一致, 故鉴定为 vanillic acid(4-羟基-3-甲氧基苯甲酸)。

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家重点实验室核磁室代测 NMR光谱; 中科院化学所代测 EIMS和 HR-SIMS谱; 中国医科院药物所国家药物及代谢产物分析研究中心代测 X衍射分析。

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Studies on Fatty Acid Composition in the Oil of *Momordica cochinchinensis*

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Abstract To determine the fatty acid composition in the oil of *Semen Momordicae* to evaluate its practical use. Fatty oil was obtained by Soxhlet extraction with petroleum ether and converted to methyl ester derivatives by methanolic potassium hydroxide. Contents of the resultant methyl esters were then determined by GC-MS. Eight fatty acids were characterized and determined. Results of the study may provide some information for the exploitation and utilization in the oil of seed of *Momordicae cochinchinensis* (Lour.) Spreng.

Key words *Momordica cochinchinensis* (Lour.) Spreng. GC-MS fatty acid

摘要 对木鳖子油中脂肪酸组成进行分析, 采用石油醚提取脂肪油, 快速甲酯化法制备成甲酯衍生物, GC-MS联用技术分析其中的脂肪酸组成和相对百分含量, 鉴定了 8 种脂肪酸成分, 为开发利用木鳖子资源提供了依据。

关键词 木鳖子 GC-MS 脂肪酸

Semen Momordicae, the dried and ripe seed of *Momordica cochinchinensis* (Lour.) Spreng. (Cucurbitaceae), is a traditional Chinese medicine considered to exhibit a cooling and resolvent effect, commonly used as a remedy for wounds, bruises, swelling, hemorrhoids and pus^[1]. It contains a high percentage of vegetable oil (35%), though its

composition has not been reported since. In order to exploit and utilize it more effectively, an unprecedented attempt to determine its fatty acid contents was carried out by GC-MS.

1 Materials and Methods

1.1 Plant Materials *Semen Momordicae* was purchased from Jilin Provincial Drug Distribution

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Company in Changchun, China, and identified as the seed of *Momordica wochinchinensis* (Lour.) Spreng. by professor Gao Qipin.

1.2 Extraction of Fatty Oil The seed was extracted with petroleum ether (30℃~ 60℃) for 8 hours in a Soxhlet apparatus. The fatty oil was obtained by removing the solvent under reduced pressure.

1.3 Preparation of Fatty Acid Methyl Esters An amount of 300 mg of fatty oil was dissolved in ether-hexane (2: 1) to give a 3 mL solution. 2.5 mL methanol and 2.5 mL 0.8 mol/L methanolic potassium hydroxide was added, agitated to ensure complete solution and allowed to react for 30 min, after which a saturated sodium chloride solution was added to separate the organic layer^[2]. 1 mL of the supernatant layer was taken, dried with anhydrous sodium sulfate, and diluted with hexane to 50 mL.

1.4 GC-MS Analysis of Fatty Acid Methyl Esters GC-MS was carried out on a Hewlett-Packard Model HP 6890 gas chromatograph equipped with a split/splitless injection system and a HP-5 capillary column (30 m× 0.25 mm I. D.) in combination with a mass-selective detector. The carrier gas was helium (99.99%) at an initial column pressure of 110 kPa. The splitting ratio was 1: 30. The oven temperature was programmed from 120℃ to 180℃ at a rate of 3℃/min, which was held for 10 min and then programmed at 2℃/min to 250℃. The injection and ion source temperatures were 270℃ and 230℃. The spectra were recorded at an ionization energy of 70 eV. The scan parameter is from 20 to 400.

2 Results

2.1 The yield of fatty oil was 35% by the Soxhlet extraction with petroleum ether (30℃~ 60℃).

2.2 By retrieving in database NIST98 and comparing with standard spectra^[3], 8 fatty acid methyl esters were identified, which accounted for 88.64% of the total test sample. The analytical results of fatty acid composition of *Semen Momordicae* is shown in Table 1

Table 1 Fatty Acid Composition of *Semen Momordicae*

No.	Retention Time (min)	Component	Content (%)
1	4.43	decanoic acid methyl ester (methyl caprate)	0.96
2	17.78	hexadecanoic acid methyl ester (methyl palmitate)	4.82
3	20.89	heptadecanoic acid methyl ester (methyl margarate)	0.20
4	23.32	10, 13-octadecadienoic acid methyl ester	12.61
5	23.60	9-octadecenoic acid methyl ester (methyl oleate)	17.42
6	24.93	octadecanoic acid methyl ester (methyl stearate)	51.68
7	33.82	11-eicosenoic acid methyl ester (methyl aldrichate)	0.29
8	34.91	eicosanoic acid methyl ester (methyl amchidate)	0.66

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