

## 论文

## 单叶细辛中一个新的马兜铃酸类化合物

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## 摘要:

为了研究单叶细辛 (*Asarum himalaicum*) 的化学成分, 利用溶剂提取、硅胶柱色谱、凝胶 (Sephadex LH-20) 柱色谱和半制备型高效液相色谱 (semi-preparative high performance liquid chromatography, HPLC) 等手段进行分离、纯化, 从单叶细辛全草中共分离鉴定了15个化合物。其结构经<sup>1</sup>H NMR、<sup>13</sup>C NMR、HR-ESI-MS等谱学方法分别鉴定为4-去甲氧基马兜铃酸BII (4-demethoxyaristolochic acid BII, **1**)、马兜铃酸I (aristolochic acid I, **2**)、马兜铃酸Ia (aristolochic acid Ia, **3**)、7-羟基马兜铃酸I (7-hydroxyaristolochic acid I, **4**)、马兜铃酸IV (aristolochic acid IV, **5**)、马兜铃次酸II (aristolochic acid II, **6**)、青木香酸 (debilic acid, **7**)、马兜铃内酰胺I (aristololactam I, **8**)、9-羟基马兜铃内酰胺I (9-hydroxyaristololactam I, **9**)、7-甲氧基马兜铃内酰胺IV (7-methoxyaristololactam IV, **10**)、(2S)-柚皮素-5, 7-二-O-β-D-吡喃葡萄糖苷 ((2S)-naringenin 5, 7-di-O-β-D-pyranosylglucoside, **11**)、4-羟基苯甲酸 (4-hydroxybenzoic acid, **12**)、3, 4-二羟基苯甲酸 (3, 4-dihydroxybenzoic acid, **13**)、4-羟基肉桂酸 (4-hydroxycinnamic acid, **14**) 和β-甾醇 (β-sitosterol, **15**)。其中, 化合物**1**为新化合物, 化合物**3**~**6**、**9**、**12**~**14**为首次从细辛属植物中分离得到, 所有化合物均为首次从单叶细辛中分离得到。据文献报道, 马兜铃酸和马兜铃内酰胺类成分具肾毒性, 本研究提示单叶细辛药用的安全问题值得关注。

**关键词:** 单叶细辛 4-去甲氧基马兜铃酸BII 马兜铃酸 马兜铃内酰胺

A new aristolochic acid derivative from *Asarum himalaicum*

## Abstract:

To study the chemical constituents of *Asarum himalaicum*, fifteen compounds were isolated from a 70% ethanol extract by using a combination of various chromatographic techniques including column chromatography over silica gel, Sephadex LH-20, and semi-preparative HPLC. By spectroscopic techniques including <sup>1</sup>H NMR, <sup>13</sup>C NMR, and HR-ESI-MS, these compounds were identified as 4-demethoxyaristolochic acid BII (**1**), aristolochic acid I (**2**), aristolochic acid Ia (**3**), 7-hydroxyaristolochic acid I (**4**), aristolochic acid IV (**5**), aristolochic acid II (**6**), debilic acid (**7**), aristololactam I (**8**), 9-hydroxyaristololactam I (**9**), 7-methoxyaristololactam IV (**10**), (2S)-naringenin-5, 7-di-O-β-D-pyranosylglucoside (**11**), 4-hydroxybenzoic acid (**12**), 3, 4-dihydroxybenzoic acid (**13**), 4-hydroxycinnamic acid (**14**), and β-sitosterol (**15**). All of these compounds (**1-15**) were obtained from *A. himalaicum* for the first time. Among them, **1** was identified as a new compound, and compounds **3 - 6**, **9**, **12 - 14** were isolated from *Asarum* genus for the first time. Since the kidney toxicity of aristolochic acids and aristololactams has been reported, the result of this investigation suggests that it should be cautioned to use *A. himalaicum* as a medicine.

**Keywords:** *Asarum himalaicum* 4-demethoxyaristolochic acid BII aristolochic acids aristololactams

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1. 薛燕;童湘晖;王峰;赵维国.UPLC-UV测定细辛地上和地下部位中的马兜铃酸A[J]. 药学学报, 2008,43(2): 221-223
2. 季文萱1;;刘密新2;杨成对;谌贻璞.马兜铃酸-脱氧鸟苷酸加合物的合成及质谱分析[J]. 药学学报, 2008,43(3): 295-298
3. 楼凤昌;丁林生;吴美玉;李玲玲.北马兜铃的化学成分研究——II、马兜铃酸E的化学结构[J]. 药学学报, 1986,21(9): 702-705
4. 徐丽珍;孙南君.穆坪马兜铃化学成分的研究[J]. 药学学报, 1984,19(1): 48-55
5. 楼凤昌;丁林生;PGWateriman.绵毛马兜铃化学成分研究 V.[J]. 药学学报, 1989,24(4): 305-307
6. 彭国平;楼凤昌;王颖;赵守训;陈东军.马兜铃酸的倍半萜的酯类化合物VI.绵毛马兜铃中马兜铃酸萜酯I的结构鉴定[J]. 药学学报, 1996,31(6): 446-450
7. 楼凤昌;彭国平;王颖;赵守训.木通马兜铃化学成分研究[J]. 药学学报, 1995,30(8): 588-593
8. 相正心;何兴全;周桂芬;李翠红.马兜铃酸含量的紫外分光光度测定法及药代动力学研究[J]. 药学学报, 1984,19(3): 224-227
9. 王文华;郑锦海.中药寻骨风及其成分马兜铃酸A终止妊娠作用和毒性的研究[J]. 药学学报, 1984,19(6): 405-409
10. 冯毓秀;林寿全;张秀琴.国产马兜铃属的植物和生药研究:资源利用[J]. 药学学报, 1983,18(4): 291-298

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