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藏药独一味化学成分及测定方法研究进展

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独一味 *Lamiophlomis rotata* (Benth.) Kudo 为唇形科独一味属植物, 又名独步通^[1]。其根或根茎及全草入药, 生长于海拔 3 000 m 以上的裸岩等, 分布于我国青海、西藏、四川、甘肃等地区, 有丰富的药用资源。现已从独一味中分离和鉴定的化学成分有黄酮类、环烯醚萜类和苯乙醇苷类等成分。独一味具有多方面的药理作用。尤其具有显著的止血镇痛作用。研究发现, 独一味中总黄酮具有明显的镇痛作用, 是其镇痛有效部位^[2]。环烯醚萜苷类成分是独一味中的主要止血活性成分, 作用与云南白药相近^[3]; 挥发油类成分是其抗肿瘤活性成分^[4]。

1 化学成分

1.1 地上部分

1.1.1 黄酮类成分: 梁重栋^[5]从地上部分分得 5 个黄酮类化合物: 木犀草素、木犀草素-7-O-葡萄糖苷、槲皮素、槲皮素-3-O-阿拉伯糖苷、芹菜素-7-O-新陈皮糖苷。

王瑞冬等^[6]从地上部分的正丁醇提取部分分得 3 个黄酮类成分: 木犀草素-7-O-β-D-吡喃葡萄糖苷, 芹菜素-7-O-β-D-吡喃葡萄糖苷, 木犀草素-7-O-[β-D-呋喃芹菜糖(1→6)]-β-D-吡喃葡萄糖苷。

1.1.2 环烯醚萜类成分: 从独一味地上部分乙醇回流提取物的丙酮部分分得 3 个环烯醚萜类成分: 8-O-乙酰山梗苷甲酯、山梗苷甲酯、sesamoid^[7]。

从正丁醇部分分得独一味素 A、番木鳖苷、schimoside、phlominol、7,8-dehydropenstemoside 和一新化合物{3-氧-4-

烯-5-甲酯基-7-羟基-9-甲基杂双环[4.3.0]-壬烷基}-2-氧-β-D-吡喃葡萄糖(1→6)]-β-D-吡喃葡萄糖苷^[3]。

1.1.3 苯乙醇苷类成分: 从独一味地上部分的正丁醇提取部分分得 3 个化合物 forsythoside B、venbasoside、betonyosides A^[6]。

1.1.4 其他成分: 在正丁醇提取部分分到淫羊藿次苷 H₁^[6]。

1.2 根

1.2.1 黄酮类成分: 独一味根经乙醇回流提取, 用石油醚萃取, 分得 1-羟基-2,3,5-三甲氧基咕吨酮^[8]。

1.2.2 环烯醚萜类成分: 易进海^[6,7]从独一味根的乙醇提取物的醋酸乙酯部分分得 3 个新环烯醚萜类成分, 独一味素 A、B^[9]、C^[10](lamiophlomiols A、B、C), 前两者为一对差向异构体。

又从其根的正丁醇提取物中分离到 4 个环烯醚萜苷, 鉴定为 8-O-乙酰山梗苷甲酯、6-O-乙酰山梗苷甲酯、penstemoside 和 7,8-dehydropenstemoside^[11]。

1.2.3 苯乙醇苷类成分: 在独一味根的正丁醇提取物中分得 2 个苷类化合物: 3-羟基-4-甲氧基苯乙基-O-[α-L-吡喃鼠李糖(1→3)]-O-[β-D-呋喃芹菜糖(1→6)]-4-O-阿魏酰基-β-D-吡喃葡萄糖苷和 3-甲氧基-4-羟基苯乙基-O-[α-L-吡喃鼠李糖(1→3)]-O-[β-D-呋喃芹菜糖(1→6)]-4-O-阿魏酰基-β-D-吡喃葡萄糖苷, 即为独一味苷 A^[12]。

1.2.4 其他成分: 经乙醇回流提取, 用石油醚萃取, 从独一味根中分得 β-谷甾醇、软脂酸、混合饱和脂肪酸^[8]。

2 测定方法

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《中国药典》2005 年版中独一味药材采用 HPLC 法,测定木犀草素的量。独一味胶囊的测定项中,以芦丁为对照品,应用比色法测定总黄酮的量;用高效液相色谱法测定木犀草素的量。以此为基础,对独一味药材及制剂进行了大量的定量方法研究。

以芦丁为对照品,用石油醚对独一味软胶囊内容物进行脱脂后,建立独一味软胶囊中总黄酮的比色测定法^[13]。以木犀草素为对照品,测定了不同产地独一味叶中木犀草素的量。4 个不同产地(西藏拉萨、青海九治县、四川若尔盖、甘肃玛曲县)独一味叶中木犀草素的量分别为 0.222、0.284、0.241、0.296 mg/g^[14]。同样以木犀草素为对照品,对独一味颗粒(无糖型)^[15]、微丸^[16]中所含的主要成分木犀草素进行了测定研究。采用 RP-HPLC 法同时对独一味胶囊中木犀草素、异鼠李素进行测定,重现性好,克服了比色法因显色造成的测定误差^[17]。

以独一味中 phlorigidoside C 为对照品,用 HPLC 法测定了不同批次药材中所含的量,3 批药材的测定结果分别为 3.607、4.142、3.985 mg/g^[18]。又建立了以固相萃取-高效液相色谱法(SPE-HPLC),测定雪域金刚胶囊中 phlorigidoside C 的量^[19]。

李茂星等^[20]建立了独一味药材及独一味胶囊中总环烯醚萜苷的测定方法。以 8-乙酰氧基山梗菜甲酯为对照品,采用对二甲氨基苯甲醛比色法测定总环烯醚萜苷的量,该方法简便、可靠,可作为独一味及其制剂的质量控制方法之一。

3 结语

《中国药典》在制定独一味制剂质量标准时只要求测定其中的总黄酮,对总环烯醚萜苷类成分未加控制。因此有必要对总黄酮成分之外的其他成分的定量控制进行研究,以保证药物的有效性和质量控制的科学性。而且,独一味止血、镇痛的有效部位中单体化合物的活性筛选很少,是今后值得深入研究的课题。目前,该植物的生物活性已被研究者们日益关注,相信在不久的将来,独一味的药用价值将会得到更有效的开发和利用。

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