薄层扫描法测定长白山区唐松草中药根碱的含量

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摘 要: 采用薄层扫描法对长白山区3种唐松草(展枝唐松草、箭头唐松草、翼果唐松草)茎叶及根中药根碱含量进行测定。结果表明: 长白山区3种唐松草茎叶及根中均含有药根碱, 且药根碱分布规律为茎叶中含量均高于根中, 其中翼果唐松草茎叶中药根碱含量最高为0.518%, 根中含量为0.081%, 展枝唐松草茎叶中含量为0.458%, 根中含量为0.177%, 箭头唐松草茎叶含量为0.339%, 根中含量为0.071%, 该结果为野生唐松草资源的开发利用奠定了科学的理论依据。

关键词: 薄层扫描; 唐松草; 药根碱; 含量

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唐松草是毛茛科(Ranuneulaceae)唐松草属(*Thalictrum*)植物, 别名白蓬草、草黄连、马尾连、土黄连。大部分做马尾连用, 以全草或根茎入药, 味苦, 性寒, 归肺、心、肝、脾、大肠经。该植物主要生活在北温带, 世界上共有150多种, 国内有67种[1]。主产于四川、云南及东北等地, 长白山地区以展枝唐松草、箭头唐松草、翼果唐松草最为常见。

唐松草主要成分为生物碱, 如药根碱、小檗碱等, 具有降血糖, 抗菌, 治疗细菌性痢疾等药理作用[2]。目前国内外对于长白山区3种唐松草的药根碱含量测定未见报道, 该试验通过薄层色谱法对3种唐松草茎叶及根中药根碱的含量进行测定, 评价唐松草各部位的药用价值, 为其资源的合理开发利用提供一定参考依据。

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1 材料与方法

1.1 试验材料

展枝唐松草、箭头唐松草、翼果唐松草采自通化师范学院后山, 经通化师范学院于俊林教授鉴定; CS-9301PC薄层色谱扫描仪(日本岛津); AL104十万分之一电子分析天平(梅特勒-托利多仪器上海有限公司); 药根碱对照品(中国药品生物制品检定所, 批号: 0733-200005); 硅胶G板(青岛海洋化工厂); 甲醇、苯、醋酸乙酯等试剂均为分析纯。薄层色谱条件[3]: 展开剂: 苯-乙酸乙酯-甲醇-异丙醇-氨水(12∶6∶3∶3∶1); 色谱参数: λ=410 nm, 中度灵敏, 光源为钨灯, 反射式锯齿扫描, 狭缝1.2 mm×1.2 mm, 扫描速度20 mm/min。

1.2 试验方法

对照品溶液的制备[4]: 精密称定药根碱标准品7.9007 mg至5 mL容量瓶中加盐酸-甲醇(1∶100)定容至刻度, 得1.58014 mg/mL标准品溶液。供试品溶液的制备[5]: 将3种唐松草均分成茎叶和根2部分, 粉碎

GC/MS Analysis of the Component of Fatty Acid from *Sambucuswilliamsii* and *Sambucus manshurica*

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Abstract: The fatty acids of 2 elderberry (*Sambucas williansii* Hance and *Sambucus manshurica*. kitag) were extracted by Supercritical CO_2 extraction and their main component were analyzed by GC/MS in this paper. The results showed that they had 9 kinds of components were isolated by Supercritical CO_2 extraction, 5 kinds of them were the same as components and they were Phenol[2, 4-bis(1, 1-dimethylethyl)], n-Hexadecanoic acid, Oleic Acid, Octadecanoic acid and unsaponifiable matter γ-Sitosterol. But the contents of them was difference. 2 kinds elderberry had differently 4 components was different. *Sambucas williansii* had 9-Hexadecenoic acid (Z, Z)-, 9, 12-Octadecadienoic acid (Z, Z)-, Isopropyl linoleate and 9-Octadecenal, (Z)-. And *Sambucus manshurica* had Hexadecenoic acid, Z-11-, 9, 17-Octadecadienal, (Z)-, 9-Octadecenamide, (Z)-and Cyclododecyne.

Key words: *Sambucas wlliansii* Hance; *Sambucus manshurica*. kitag; unsaponifiable matter; GC/MS

过40目筛。称取各部位粉末2.5 g,分别加盐酸-甲醇(1∶100)25 mL,超声提取30 min,冷却至室温后,过滤,滤液蒸干,用2~3 mL甲醇溶解转移置10 mL容量瓶中,加甲醇至刻度,备用。

2 结果与分析

2.1 线性关系的考察[6]

精密吸取药根碱对照品溶液0.5、1.0、2.0、4.0、6.0 μL点于同一块硅胶G薄层板上,展开扫描,测定各斑点的峰面积,以对照品点样量X为横坐标,峰面积Y为纵坐标,绘制标准曲线,回归方程为$Y=275.72X+209.05$,$r=0.9988$($n=5$),结果表明,药根碱在0.79~9.48 μg范围内具有良好的线性关系。

2.2 方法学考察

精密度试验结果显示,RSD=0.482%(n=5),表明仪器精密度良好;稳定性试验结果显示,RSD=0.9453%(n=5),表明供试品溶液应在显色后15 min开始测定,120 min内测完;重复性试验结果显示,RSD=1.14%(n=5),表明方法的重现性良好;加样回收率试验结果显示,均回收率为101.01%,RSD=1.255%(n=5),表明测定方法稳定可靠。

2.3 样品含量测定

分别取3种唐松草茎叶和根的供试品溶液及药根碱对照品溶液5 μL点于硅胶G板上,平行点样3次,按上述色谱条件展开,扫描,测得3种唐松草茎叶和根中药根碱含量(表1)。

3 结论

展开剂选择时曾选用二元及三元展开系统,但展开效果均不理想,经反复摸索展开剂最终定为苯-乙酸乙酯-甲醇-异丙醇-水(12∶6∶3∶3∶1),展开后斑点清晰独立无拖尾等现象,保证了含量测定时结果的准确性。

表1 唐松草茎叶和根中药根碱含量测定结果(n=3)

编号	部位	药根碱平均含量/%	RSD/%
1	展枝唐松草茎叶	0.458	0.960
2	展枝唐松草根	0.177	1.150
3	翼果唐松草茎叶	0.518	0.727
4	翼果唐松草根	0.081	0.907
5	箭头唐松草茎叶	0.339	1.295
6	箭头唐松草根	0.071	0.816

3种唐松草各部位均含有药根碱,其中翼果唐松草茎叶(0.518%)>展枝唐松草茎叶(0.458%)>箭头唐松草茎叶(0.339%)>展枝唐松草根(0.177%)>翼果唐松草根(0.081%)>箭头唐松草根(0.071%),试验数据显示,药根碱在3种唐松草中的分布规律为地上茎叶高于低下根,表明了3种唐松草的地上部位具有更大的药用开发利用价值。

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Determination the Content of Jatrorrhizine in *Thalictrum* of Changbai Mountain by the Method of Thin-layer Chromatography

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Abstract: The content of Jatrorrhizine in the stems and leaves and roots of three kinds of *Thalictrum* in Changbai Mountain were determined by thin-layer chromatography. The results showed that Jatrorrhizine were fond in *Thalictrum* and the distribution of the content of Jatrorrhizine was that the stems and leaves higher than roots. The content of Jatrorrhizine were 0.518% in the stems and leaves, 0.081% in the roots of *Thalictrum aquilegifolium*; The content of Jatrorrhizine were 0.458% in the stems and leaves, 0.177% in the roots of *Thalictrum squarrosum*; The content of Jatrorrhizine were 0.339% in the stems and leaves, 0.071% in the roots of Thalictrum simplex L.. It provided theoretical basis for the further research on wild *Thalictrum* in Changbai Mountain.

Key words: thin-layer chromatography; *Thalictrum*; Jatrorrhizine; content