0.85%, indicating that the solution was stable at least for 12 hours.

3.5 Recovery. The quantitative Breviscarpin Tablet 6 portions were weighed up and put into 10 mL measuring flask, then dissolved in methanol and ultrasonic oscillation for 30 minutes after adding the stock solution of scutellarin. According to the process in 3.6, the results were obtained with average recovery of 100.43% and *RSD* was 0.58% (n= 6).

3.6 Sample measurement. The quantitative Breviscapin Tablet 9 portions were weighed up and put into 50 mL measuring flask, then dissolved in methanol and ultrasonic oscillation for 30 minutes. Filtrate (1 mL) of the second filtration was put into a 10 mL measuring flask and fixed the volume, then 10 μL sample was injected. The measured contents were listed in table 1.

Table 1 Scutellarin in Breviscarpin Tablet (n= 3)

No.	average scutellarin contents/%	*RSD*/%
1	21.97	1.41
2	22.16	0.93
3	21.69	1.83

4 Conclusion

4.1 The selection of mobile phase. The mobile phases of different system and proportions were compared, such as methanol-acetic acid solution, methanol-H_2O-triethylamine, methanol-phosphoric acid-isopropanol, acetonitrile-0.5% acetate solution, and acetonitrile-H_2O-trethylamine. The optimized effect for isolating scutellarin was obtained by acetonitrile-0.5% acetate solution (22∶78) as the mobile phase.

4.2 The selection of extractive method. Several extractive methods, such as Soxhlet extract, heating in water bath, ultrasonic extracting, and different extractive solvents, such as methanol, ethanol, *n*-butanol, ethyl acetate, chloroform and ligarine were used, while using methanol as a solvent and the ultrasonic extracting for 30 minutes was found to be a simple method with little disturbance.

4.3 The range of pH values. Scutellarin is a flavonoid compound, which has several phenolic hydroxyl to display the weak acidity. Comparing the different pH values, the peaks are acuity and symmetry in the pH range at 2.5- 3. That is in coincidance with *Chinese Pharmacopoeia*.

The results indicated that this method is stable, accurate and convenient for controlling quality of the medicine.

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刺糖中氨基酸成分的研究

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刺糖为豆科植物骆驼刺 *Alhagi pseudalhagi* Desv.叶中分泌液凝结而成的糖粒,为一味传统维吾尔医药,在《维吾尔医常用药材》中早有记载[1~3],至今临床仍在使用。据文献报道刺糖中主要成分为糖类(淀粉,鼠李糖等)和维生素 C,维生素 B_1。但是关于刺糖的氨基酸成分至今未见报道。本实验测定了刺糖中氨基酸成分。

1 材料与仪器

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刺糖样品取自吐鲁番地区,糖粒呈圆球形的小颗粒,黄白色,有粘性,味甜(以色黄白、无枝叶泥砂杂质者为佳)。

日立 835-50氨基酸自动分析仪(日本日立)(柱长 4 mm× 150 mm,流速为 0.45 mL/min),756CRT— MC型紫外分光光度计(上海分析仪器厂)。氨基酸标准品,上海试剂二厂,层析纯;蛋白质标准品为上海化学试剂采购供应站;牛血清蛋白,电泳纯。

2 方法与结果

2.1 用 756CRT— MC型紫外分光光度计测定蛋白质浓度:称取经凯氏定氮法校正的结晶牛血清蛋白,用水配成 1 mg/mL的蛋白质溶液[4]。吸取上述溶液 0.0, 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0 mL于 10 mL容量瓶中,分别加入蒸馏水 4 mL,以蒸馏水调零,测定吸光度,绘制标准曲线,得回归方程 $C= 0.05A- 0.01$, $r= 0.9996$。

吸取 1 mL样品稀释液,加入蒸馏水 4 mL,以蒸馏水调零,测定吸光度,对照标准曲线求得蛋白质浓度为 24.67%。

2.2 日立 835-50型氨基酸自动分析仪氨基酸检测:称取样品适量,用 0.02 mol/L HCl浸饱 24 h,加 4% 磺基水杨酸沉淀蛋白,定容,离心,上清液上机分析游离氨基酸。称取样品适量,加入 4 mol/L LiOH冲 N_2封管,110℃水解 22~ 24 h,定容离心,上清液上机分析水解色氨酸和牛磺酸。称取样品液适量,加入 6 mL/L HCl冲 N_2封管,110℃水解 22~ 24 h,定容离心,上清液上机分析除色氨酸和牛磺酸之外的其他水解氨基酸。结果见表 1。

3 讨论

从以上数据可看出,刺糖中游离氨基酸和水解氨基酸中含有人体必需的 8种氨基酸,以及 10种非必需氨基酸,因此一般容易被人体吸收,对人体有补体解渴的作用,虚弱与营养不良有益处[5]。

天冬氨酸的含量也较高,天冬氨酸与天门冬类似具有健身,清热,提神,镇咳,祛痰,利尿作用[1]。天冬氨酸能促进骨髓淋巴细胞前体发育分化成为成熟的 T淋巴细胞辅助增强免疫刺激剂[6],作为维吾尔医药使用。

表 1 刺糖中氨基酸成分 %

Table 1 Amino acids in *Saccharum Alhagi* %

名 称	游 离	水 解
半胱氨酸(CysH)	0.540	未测出
天冬氨酸(Asp)	0.129	4.462
丝氨酸(Ser)	0.150	3.400
谷氨酸(Glu)	0.130	5.450
苏氨酸(Thr)	0.060	2.520
脯氨酸(Pro)	0.246	15.200
甘氨酸(Gly)	0.020	6.702
丙氨酸(Ala)	0.289	5.792
胱氨酸(Cys)	未测出	未测出
缬氨酸(Val)	0.150	4.220
蛋氨酸(Met)	0.060	1.252
异亮氨酸(Ile)	0.108	3.092
亮氨酸(Leu)	0.382	6.775
酪氨酸(Tyr)	0.130	3.225
苯丙氨酸(Phe)	0.082	1.636
刺氨酸(Lys)	0.062	2.444
色氨酸(Trp)	0.052	0.660
精氨酸(Arg)	0.204	3.047
牛磺酸(Tau)	0.324	0.760
氨基酸总量	1.554	27.111

刺糖中含有一定量的牛磺酸,牛磺酸具有调节人体免疫力的作用,同样也是一个具有潜在开发价值的药用产品。

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