

研究简报

# 中药菟丝子中生物活性成分的毛细管电泳-电化学检测

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**摘要** 采用毛细管电泳-电化学检测法(CE-ECD)同时测定了菟丝子中芦丁、金丝桃甙、山柰酚、对香豆酸和槲皮素等5种主要生物活性成分的含量,考察了运行缓冲液酸度和浓度、分离电压、氧化电位和进样时间等实验参数对分离检测的影响。在最佳实验条件下,以直径300 μm的碳圆盘电极为工作电极,检测电位为+950 mV(vs. 参比电极),以50 mmol/L的硼砂缓冲溶液(pH 9.0)为运行缓冲液,上述各组分在19 min内能完全分离。芦丁、金丝桃甙、山柰酚、对香豆酸和槲皮素在两个数量级的范围内呈良好线性关系,检测下限(按S/N=3计)分别为1.93×10<sup>-5</sup>, 3.55×10<sup>-4</sup>, 3.65×10<sup>-5</sup>, 1.73×10<sup>-5</sup>和1.46×10<sup>-4</sup> g/L。该法已成功地应用于菟丝子中活性成分的分离检测,结果令人满意。

**关键词** [毛细管电泳](#) [电化学检测](#) [芦丁](#) [金丝桃甙](#) [山柰酚](#) [对香豆酸](#) [槲皮素](#) [菟丝子](#) [中药](#)

分类号

## Determination of Bioactive Components in Semencustae by Capillary Electrophoresis with Electrochemical Detection

### Abstract

A method of high performance capillary electrophoresis with electrochemical detection (CE-ECD) has been developed for the determination of five bioactive components in Semencustae, namely rutin, hyperoside, kaempferol, p-coumaric acid and quercetin. The effects of several factors such as the acidity and concentration of the running buffer, the separation voltage, the applied potential and the injection time on CE-ECD were investigated. Under the optimized conditions, these five components can be separated in a 50.0 mmol/L borax running buffer (pH 9.0) within 19 minutes. A 300 μm diameter carbon disk electrode was used as the working electrode positioned carefully opposite to the outlet of the capillary in a wall-jet configuration at potential of +950 mV (vs. saturated calomel electrode as reference electrode, SCE). Good linear relationships were established between the peak current and concentration of analytes over two orders of magnitude. The detection limits (S/N=3) were 1.93×10<sup>-5</sup>, 3.55×10<sup>-4</sup>, 3.65×10<sup>-5</sup>, 1.73×10<sup>-5</sup> and 1.46×10<sup>-4</sup> g/L for rutin, hyperoside, kaempferol, p-coumaric acid and quercetin, respectively. The method has been successfully applied to the determination of these analytes in Semencustae samples after a relatively simple extraction procedure, and the assay results were satisfactory.

**Key words** [capillary electrophoresis](#) [electrochemical detection](#) [rutin](#) [hyperoside](#) [kaempferol](#) [p-coumaric acid](#) [quercetin](#) [Semencustae](#) [traditional Chinese medicine](#)

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