

赵凌国,李学云,申红卫,张金金,尤俊,梁肇海. 纳米金复合材料涂层毛细管电泳法快速测定鱼肉中的组胺[J]. 中国食品卫生杂志, 2014, 26(6): 575-579.

## 纳米金复合材料涂层毛细管电泳法快速测定鱼肉中的组胺

### Rapid determination of histamine in fish by gold nanoparticles composite coated capillary electrophoresis

投稿时间: 2014-08-17

DOI:

中文关键词: [鱼肉](#) [组胺](#) [毛细管电泳](#) [涂层](#) [食品安全](#)

Key Words: [Fish](#) [histamine](#) [capillary electrophoresis](#) [coat](#) [food safety](#)

基金项目:

作者 单位

E-mail

[赵凌国](#) [深圳市福田区疾病预防控制中心, 广东 深圳 518040](#)

[zhaolingguo2008@163.com](mailto:zhaolingguo2008@163.com)

[李学云](#) [深圳市福田区疾病预防控制中心, 广东 深圳 518040](#)

[申红卫](#) [深圳市福田区疾病预防控制中心, 广东 深圳 518040](#)

[张金金](#) [深圳市福田区疾病预防控制中心, 广东 深圳 518040](#)

[尤俊](#) [武汉大学化学与分子科学学院, 湖北 武汉 430072](#)

[梁肇海](#) [深圳市福田区疾病预防控制中心, 广东 深圳 518040](#)

摘要点击次数: 433

全文下载次数: 781

中文摘要:

建立高效毛细管电泳法快速检测鱼肉中组胺含量的方法。方法 鱼肉样品经100 g/L的三氯乙酸溶液超声萃取20 min, 萃取液经离心和过滤后进行毛细管电泳分离检测。采用季铵化纤维素负载的纳米金复合材料(QC-Au NPs)对毛细管内壁进行动态涂层, 以抑制管壁对组胺的吸附。电泳条件: 毛细管为熔融石英毛细管(75/365  $\mu\text{m}$ , 40/47 cm), 运行缓冲液为500  $\mu\text{g}/\text{ml}$  QC-Au NPs 磷酸缓冲液(pH=6.0), 反向电压-12 kV, 柱温20  $^{\circ}\text{C}$ , 检测波长211 nm。结果 在涂层毛细管中, 组胺的吸附被抑制, 峰拖尾现象消除, 并在4 min内出峰。组胺在0.05 ~ 0.80 mg/ml浓度范围内线性关系良好( $r^2=0.9987$ ), 检出限(S/N=3)为0.002 mg/ml, 定量限(S/N=10)为0.007 mg/ml。鱼肉中组胺加标回收率为94% ~ 105%, RSD为3.1% ~ 7.2%。结论 该方法具有快速、简便、准确度和精密度高等特点, 适用于鱼肉中组胺的快速检测。

Abstract:

To develop a new method for the rapid determination of histamine by capillary electrophoresis. Methods Trichloroacetic acid solution (100 g/L) combined with ultrasonic extraction was used to elute histamine from fish sample for 20 minutes. Then the solution was injected for capillary electrophoresis after centrifugation and filtration. The quaternized cellulose supported Au nanoparticles (QC-Au NPs) were used to coat the capillary inner surface and inhibit the adsorption of histamine. The capillary was fused silica capillary with id/od of 75/365  $\mu\text{m}$  and effective/total length of 40/47 cm. Running buffer was 500  $\mu\text{g}/\text{ml}$  QC-Au NPs phosphate buffer. Separation voltage was -12 kV. Temperature was 20  $^{\circ}\text{C}$ . Detection wavelength was set at 211 nm. Results The adsorption of histamine has been inhibited in the capillary coated by QC-Au NPs and the peak tailing was eliminated, the analysis of histamine could be completed within 4 minutes with satisfied accuracy and precision. Good linearity was found for histamine within the range of 0.05-0.80 mg/ml, and the  $r^2$  was 0.9987. The limit of detection(S/N=3) and the limit of quantification(S/N=10) were 0.002  $\mu\text{g}/\text{ml}$  and 0.007 mg/ml, respectively. The recoveries of histamine in fish at three spiked levels ranged from 94% to 105%, and the relative standard deviations (RSD) ranged from 3.1%-7.2%. Conclusion This method is fast, simple, precise and it is feasible for the determination of histamine in fish samples.

[查看全文](#) [查看/发表评论](#) [下载PDF阅读器](#)

您是第27824892位访问者 今日一共访问175次

版权所有: 《中国食品卫生杂志》编辑部 京ICP备12013786号-3

地址: 北京市朝阳区广渠路37号院2号楼501室 邮编: 100022

E-mail: spws462@163.com 电话/传真: 010-52165456/5441 (编辑室) 010-52165556 (主编室)

未经授权禁止复制或建立镜像

