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论著

在固相pH梯度4～7范围内海洛因成瘾者血浆蛋白质组分析

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摘要 目的 比较鉴定海洛因成瘾者和正常人血浆蛋白质组差异，为研究海洛因成瘾相关血浆蛋白提供线索。方法 海洛因成瘾者（*n*=5）和正常对照者(*n*=5)血浆蛋白经剔除白蛋白和免疫球蛋白IgG后，以固相pH梯度4～7胶条等电聚焦为第一向，SDS聚丙烯酰胺凝胶电泳为第二向，进行蛋白双向电泳。图像分析软件ImageMaster Elit 5.0分析蛋白质2维图谱。手工挖取组间相差1.5倍的差异点，串联质谱分析鉴定。结果 每张图谱平均检测到350±21个蛋白（亚基）斑点，其中5个蛋白点在2组图谱中差异1.5倍以上，鉴定结果分别为γ纤维蛋白原、人α_1B糖蛋白、α_1-抗胰蛋白酶原、视黄醇结合蛋白载体蛋白四聚体单体和铜蓝蛋白。结论 海洛因成瘾者血浆与正常人血浆对比存在蛋白质组差异。某些差异蛋白可能与海洛因成瘾造成的神经损伤相关。

关键词 海洛因依赖 光谱分析, 质量 血浆 蛋白质组 电泳, 凝胶, 双向
分类号 Q591

Proteomic analysis of plasma from heroin abusers under immobilized pH gradients 4-7

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Abstract

AIM To identify differentially expressed proteins in the plasma that may be used as biomarkers for heroin addiction through a two-dimensional (2-D) gel electrophoresis/mass spectrometry approach. **METHODS** Following removal of albumin and IgG, the plasma from 5 heroin abusers and 5 normal controls was separated by 2-D gel electrophoresis using immobilized pH gradients 4-7 drystrip and PAGE. Gel images were analyzed using ImageMaster Elit 5.0. Differential proteins were selected and analyzed through tandem mass spectrometry. **RESULTS** Average number for samples was 350±21 protein spots. In them there were 5 spots that differed by more than 1.5 fold between the two groups obtained through image analysis. Through tandem mass spectrometry above spots were identified as fibrinogen γ (increased by 5 fold), human α_1-B-glycoprotein (decreased to 1/1.8 of control group), uncleaved α_1-antitrypsin (increased by 2.5 fold), chain of transthyretin (decreased to 1/2 of control group) and ceruloplasmin (increased by 6.6 fold). **CONCLUSION** There are differences between heroin abusers and normal controls in the blood plasma proteome. Some proteins may have a role in the damage to central nervous system through heroin abuse. Such proteins may provide novel biomarkers for diagnosis and therapeutic targeting, as well as clues for understanding the mechanism of heroin abuse.

Key words heroin dependence spectrum analysis mass plasma proteome electrophoresis gel two-dimensional

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