

论著

# 先天性马蹄内翻足胎鼠脊髓组织的蛋白质组学分析

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**摘要** 目的 在构建动物模型的基础上,运用蛋白质组学实验方法,寻找马蹄内翻足畸形相关蛋白。方法 提取单纯性马蹄内翻足畸形胎鼠及正常对照胎鼠脊髓总蛋白,进行双向电泳;经PDQuest软件分析,选择差异点进行质谱鉴定,采用生物信息学方法分析结果。结果 经双向电泳分离后,畸形胎鼠与正常对照相比,脊髓组织的烯醇化酶没有表达,微管蛋白表达下调,载脂蛋白表达上调,ATP合酶F1复合体组装因子2(ATP12P)额外表达。结论 畸形胎鼠脊髓组织与正常对照比较,存在蛋白质组差异,畸形胎鼠微管蛋白、ATP12P表达改变,可能与马蹄内翻足畸形相关。

**关键词** [马蹄内翻足](#) [蛋白质组](#) [模型,动物](#) [脊髓](#)

分类号

## Proteomic analysis of spinal cord in rat fetus with talipes equinovarus

**Abstract** OBJECTIVE By establishing rat fetuses talipes equinovarus model induced by all-trans-retinoic acid and the proteome technique, to identify the particular proteins in the pathogenesis of talipes equinovarus (clubfoot)-like deformities. METHODS Pregnant rats were given all-trans-retinoic acid 135mg•kg<sup>-1</sup> at 10th of gestation by a single intragastric infusion. Spinal cord were removed from rat fetus at 21st of gestation. Proteins were extracted with lysis solution (5 mol•L<sup>-1</sup> urea, 2 mol•L<sup>-1</sup> thiourea, 2% CHAPS, 2% SB3-10, 40 mmol•L<sup>-1</sup> Tris, 0.2% Bio-Lyte 3-10), 20 mL•g<sup>-1</sup> tissue. For two dimensional electrophoresis, immobilized pH gradient gel (IPG, pH 3-10 and pH 5-8) isoelectric focusing was set as the first dimension, while 12% SDS polyacrylamide gel electrophoresis was set as the second dimension. Loaded sample sizes were 1.0mg (350μL) for each pH 3-10 IPG strip and pH 5-8 IPG strip. Following electrophoresis, gels were stained with Coomassie brilliant blue. The images were analyzed with a PDQuest 7.1.0 software package. Spots with significant differences were subjected to mass spectrometry analysis. The peptide mass fingerprints were identified with protein databases by using bioinformatics. RESULTS Compared with those of the normal controls, a total of six protein spots among the samples of model rat fetus showed significant differences. And peptide mass fingerprints were acquired for five among them. As follows: the model rat fetus losing the spot of enolase and have the extra expression of ATP synthase mitochondrial F1 complex assembly factor 2 (Atp12p); the expression of tubulin increasing and apolipoprotein decreasing. CONCLUSION Proteomic difference between model and normal rat fetus can be well presented with 2D electrophoresis. Expression change of tubulin and Atp12p may be related to the pathogenetic mechanisms of talipes equinovarus.

**Key words** [talipes equinovarus](#) [proteome](#) [model, animal](#) [spinal cord](#)

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