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论著

缺血再灌注诱导大鼠骨骼肌组织蛋白质组变化的初步研究

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摘要 目的：研究缺血再灌注(ischemia/reperfusion, I/R)对大鼠骨骼肌组织蛋白质表达谱的影响。方法：健康雄性Wistar大鼠12只随机分为2组(n=6)：假手术组和I/R组，无创动脉夹夹闭右侧股动脉4 h，松夹再灌注24 h建立I/R模型；实验结束时提取骨骼肌组织蛋白质，双向电泳技术分离骨骼肌组织蛋白质，分析差异显示的蛋白质并选取7个差异显著的蛋白点进行质谱分析。结果：双向电泳可分离(354±13)个蛋白质，点匹配率为(78.7±1.4)%，I/R诱导骨骼肌组织10种蛋白质出现明显差异表达，其中6种表达上调，3种表达下调，1种在I/R组为2个点。质谱鉴定出5个蛋白质为：线粒体醛脱氢酶(mitochondrial aldehyde dehydrogenase，ALDH)前体、热休克蛋白27(heat shock 27 kD protein，HSP27) 和一未命名蛋白（I/R组表达升高）、α-肌动蛋白(α- actin，I/R组表达下降）、核转移因子2 (nuclear transport factor 2，NTF - 2) 在I/R组发生突变。结论：I/R损伤引起大鼠骨骼肌蛋白质表达发生改变，其中α-肌动蛋白、ALDH和HSP27表达及NTF-2突变可能与I/R损伤有关。

关键词 再灌注损伤； 蛋白质组； 电泳,双向,凝胶； 肌,骨骼

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Ischemia reperfusion-induced proteomic changes in rat skeletal muscle

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Abstract

<FONT face=Verdana>AIM: To investigate ischemia reperfusion (I/R)-induced proteomic changes in rat skeletal muscle.
METHODS: Healthy male Wistar rats were randomly divided into two groups as follows (n=6): sham group and I/R group. I/R of right hind limb was induced by 4 h ischemia followed by 24 h reperfusion. The 2-DE was applied to separate the proteins extracted from skeletal muscle tissue at the end of experiment, followed by Coomassie Brillant blue R-250 staining. Computer image analysis was used to determine the differential expression of proteins between the two groups, and 7 protein spots expressed differentially were picked out and subjected to in-gel digest and MALDI-TOP for identification.
RESULTS: 354±13 proteins were detected and the match rate was (78.7±1.4)%. 10 proteins displayed significant changes after I/R, of which, 6 proteins increased and 3 proteins decreased in expression. Moreover, 2 spots in I/R group were observed, only 1 spots of which in control. 5 proteins were identified after mass spectrometry. Mitochondrial aldehyde dehydrogenase (ALDH) precursor, heat shock 27 kD protein (HSP27), an unnamed protein product (increased in I/R group), α-actin (decreased in I/R group), and nuclear transport factor 2 (NTF-2) W7a mutant were found in I/R group.
CONCLUSION: I/R injury induced differential proteomic changes in rat skeletal muscle. ALDH, α-actin and HSP27 expression, and NTF-2 mutation are involved in I/R injury.</FONT>

Key words Reperfusion injury Proteome Electrophoresis two-dimensional gel Muscle skeletal

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