

论著

腺苷A1受体激动剂预处理兔延迟相心肌蛋白质组学分析

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摘要:

目的: 研究腺苷A1受体激动剂2-氯环戊腺苷(2-chloro-N6-cyclopentyladenosine, CCPA)预处理延迟相缺血再灌注心肌保护的蛋白质表达谱的变化。方法: 8只新西兰大白兔随机分为CCPA预处理组(CCPA组)和生理盐水预处理组(NS组)。CCPA组用100 μg/kg CCPA预处理大白兔, NS组用生理盐水预处理。24 h后冠状动脉左前降支30 min缺血/2 h再灌注, 然后取左心室缺血区心肌组织进行蛋白质组学研究。另取12只新西兰大白兔随机分为假手术组(Sham组)、生理盐水预处理组(NS组)和CCPA预处理组(CCPA组), 每组4只, 用Western印迹验证差异蛋白αB-晶状体蛋白的表达。结果: 双向凝胶电泳分析发现2组表达明显差异的蛋白点有55个。其中17个差异蛋白点用基质辅助激光解吸-电离飞行时间质谱技术以及Mascot和Expasy软件分析, 初步鉴定出17个蛋白质。这些蛋白质包括应激反应蛋白、代谢相关蛋白、信号调节蛋白、离子通道蛋白、免疫相关蛋白等。Western印迹证实αB-晶状体蛋白在CCPA组中的表达明显上调。结论: CCPA预处理延迟相缺血再灌注心肌组织的蛋白质表达谱发生改变, 这些蛋白质可能与腺苷A1受体激动剂预处理延迟相缺血再灌注心肌保护作用有关。

关键词: 腺苷A1受体激动剂 2-氯环戊腺苷 预处理 延迟相 心肌保护 蛋白质组

Proteomics analysis of adenosine A1 receptor agonist-induced delayed myocardial protection in rabbits

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Abstract:

Objective To investigate the changes of myocardial protein expression profiles in 2-chloro-N6-cyclopentyladenosine (CCPA), an adenosine A1 receptor agonist-induced delayed myocardial protection in New Zealand rabbits. Methods A total of 8 rabbits were randomly divided into a CCPA group (CCPA group) and a normal saline group (NS group). CCPA and NS were infused into rabbits in the CCPA group and the NS group respectively. Twenty-four hours later, the rabbits were subjected to 30 min left anterior descending coronary artery occlusion and were reperfused for 2 hours, then the ischemic zone tissues of left ventricle were sampled for proteomic analysis. A total of 12 other New Zealand rabbits were divided into a sham group (Sham group), a normal saline group (NS group) and a CCPA group (CCPA group). The expression of αB-crystalline, one of the differential proteins, was confirmed by Western blot. Results Analysis of two dimensional gel electrophoresis showed that the expression of 55 protein spots were different between the two groups, 17 protein spots were preliminarily identified with the matrix-assisted laser desorption/ionization time-of-flight mass spectrometry (MALDI-TOF-MS) and Mascot and Expasy bioinformatics software. These proteins included stress proteins, metabolism-associated proteins, signal transduction pathway-related proteins, ionophorous proteins, immunity-associated proteins, and so on. Western blot showed that the expression of αB-crystalline was significantly up-regulated in the CCPA group. Conclusion The myocardial protein expression profiles are changed markedly in the preconditioning late phase of CCPA. The differential proteins might be involved in the delayed cardioprotection induced by CCPA.

Keywords: adenosine A1 receptor agonist 2-chloro-N6-cyclopentyl-adenosine preconditioning late phase cardioprotection proteomics

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