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基础医学

## GATA-4基因增加骨髓间充质干细胞抗缺氧能力的探讨

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摘要:

目的 探讨GATA-4基因对骨髓间充质干细胞(MSCs)在低氧环境下存活能力的影响。方法 将GATA-4基因转染大鼠MSCs, 以转染空质粒的MSCs做对照, 通过蛋白印迹法检测GATA-4转染效果。模拟体内心肌梗死氧化应激损伤, 在低氧环境下培养48h, 观察MSCs形态变化。通过MTT细胞增殖测定、膜联蛋白V-PE凋亡检测和乳酸脱氢酶(LDH)释放评价MSCs存活能力。结果 在低氧环境下, GATA-4基因修饰组与转染空质粒的对照组相比, MTT摄取增加、膜联蛋白V阳性细胞数降低、LDH释放减少, 差异有统计学意义( $P < 0.05$ )。结论 转录因子GATA-4可以增加MSCs抗缺氧能力, 增加细胞存活; 为MSCs移植治疗缺血性心肌病、增加细胞存活提供新的方法。

关键词: GATA-4; 骨髓间充质干细胞; 低氧环境; MSCs移植; 缺血性心肌病

## Discussion of GATA-4 improving MSCs hypoxia resistance

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Abstract:

Objective To elucidate the effects of GATA-4 on MSCs survival ability in hypoxic condition. Methods Rat MSCs were transfected with GATA-4 gene, and MSCs transfected with blank plasmid were regarded as contrast. The GATA-4 transfection effect was detected by Western blotting. The MSCs were cultured after exposure to hypoxia for 48h to imitate the myocardial infarction oxidative stress injury in vivo. The morphology of MSCs was observed. The rate of MTT cell proliferation, the positive rate of annexin V-PE apoptosis detection and the level of LDH were tested to evaluate the MSCs survival ability. Results The positive rate of annexin V-PE apoptosis and the level of LDH significantly decreased and the rate of MTT cell proliferation increased in GATA-4 transduced MSCs(MSCGATA-4) than in the control group(MSCNull). The difference was statistically significant( $P < 0.05$ ). Conclusion GATA-4 promotes MSCs hypoxia resistance and survival ability, which provides a new pathway to treat ischemic cardiomyopathy by MSCs transplantation and increase cell survival ability.

Keywords: GATA-4; MSCs; Hypoxic condition; MSCs transplantation; Ischemic cardiomyopathy

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