

论著

大鼠星形胶质细胞与运动神经元VSC4.1共培养体系中活性氧产生水平的变化

唐璐^{1▲}, 邓敏^{1▲}, 裴月红¹, 张楠¹, 乐卫东², 樊东升¹, 张俊^{1△}

1北京大学第三医院神经内科, 北京 100191; 2Department of Neurology Baylor College of Medicine, Houston, Texas 77030, USA

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摘要 目的: 探讨野生型星形胶质细胞(ASC)和运动神经元VSC4.1(VSC)共培养时两者产生活性氧(ROS)的相互影响。方法: MTT法测定比较ASC和VSC在单独培养和共培养时受到兴奋性刺激后生长抑制率; ASC与Hoechst 33342标记的VSC共培养或分别单独培养时, 激光共聚焦显微镜实时观察2种情况下两者产生ROS的能力。结果: 较高浓度谷氨酸刺激可使共培养的混合细胞抑制率(IRVSC+ASC)明显高于星形胶质细胞抑制率(IRASC), 而较低浓度时IRVSC+ASC高于IRVSC。激光共聚焦显微镜实时观察发现共培养时VSC产生ROS水平明显低于单独培养的VSC, 且前者在15 min时出现明显升高, 而单独培养的VSC产生的ROS在5 min内达到峰值后即逐渐降低; 共培养时ASC产生的ROS在10 min时出现明显升高。结论: ASC和VSC共培养时ASC可降低VSC静息时的ROS水平, 在受到兴奋性刺激后ASC延长VSC产生高水平ROS的时程。

关键词 [肌萎缩侧索硬化](#); [星形细胞](#); [运动神经元](#); [活性氧](#)

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Change of reactive oxygen species production in co-culture model of rat astrocytes and motor neurons VSC 4.1

TANG Lu¹, PEI Yue-hong¹, ZHANG Nan¹, LE Wei-dong², FAN Dong-sheng¹, DENG Min¹, ZHANG Jun¹

1Department of Neurology, The Peking University Third Hospital, Beijing 100191, China; 2Department of Neurology, Baylor College of Medicine, Houston, Texas 77030, USA. E-mail: who626@163.com

Abstract

AIM: To explore the mutual effect of co-culture of wild-type astrocytes (ASC) and motor neurons VSC4.1 (VSC) on the respective ability to produce reactive oxygen species (ROS). METHODS: The inhibition rates of cell growth in ASC and VSC in co-culture or independent culture was detected after exposed to excitatory stimulus by MTT method. Real-time observation of ROS production by ASC and VSC labeled with Hoechst 33342 was detected by confocal microscopy under the conditions of co-culture or independent culture. RESULTS: Higher concentration of glutamate induced a higher inhibition rate in mixed cell growth than that in ASC alone, while lower concentration of glutamate induced a higher inhibition rate in mixed cell growth than that in VSC only. Real-time observation by confocal microscopy showed that ROS production by VSC under the condition of co-culture, which showed a notable increase at 15 min, was significant less than that in independent culture, which peaked at 5 min and was gradually decreased. ROS production by ASC in co-culture began to increase significantly at 10 min. CONCLUSION: Compared to independent culture, ASC reduces the resting ROS production by co-cultured with VSC, while ASC prolongs the duration of ROS production by VSC after exposed to excitatory stimulus.

Key words [Amyotrophic lateral sclerosis](#) [Astrocytes](#) [Motor neurons](#) [Reactive oxygen species](#)

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