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PDF文档

衰逝波探测川芎嗪与剪应力对内皮细胞膜PS异位的影响

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为探讨川芎嗪和剪应力对血管内皮细胞凋亡的影响，以锥-板旋转式剪切装置提供剪应力，与川芎嗪共同作用于大鼠微血管内皮细胞(rCMEC)，采用Annexin V-FITC染色标记，利用全内反射衰逝波激发ICCD成像技术，探测川芎嗪和剪应力对rCMEC磷脂酰丝氨酸(PS)异位的影响。结果表明，培养的内皮细胞膜表面PS异位具有普遍性，静态培养内皮细胞的PS异位率(异位程度)为9.97%。作为单因素，剪应力(6×10^{-5}、12×10^{-5}、24×10^{-5} N/cm^2）或川芎嗪(31.5、63.0、126.0 μg/ml)均可使PS异位率明显下降（$P<0.001$）。在同一剪应力水平条件下，川芎嗪的给予可使内皮细胞的PS异位率进一步降低。中等水平的两因素组合降低异位率的效果较突出。结果提示，适当水平的剪应力与川芎嗪联合作用有可能明显抑制rCMEC凋亡。

THE INFLUENCES OF LIGUSTRAZINE AND SHEAR STRESS ON PS TRANSFERRING OF ENDOTHELIAL CELL MEMBRANE INVESTIGATED BY EVANECENT WAVE EXCITING

The effects of Ligustrazine and shear stress on rat cerebral microvascular endothelial cell (rCMEC) were investigated by administration of the drug incorporated with different levels of shear stress generated by rotational cone-plate rheometer. The influence of Ligustrazine and shear stress on phosphatidylserine (PS) transferring were determined by immunofluorescence of Annexin V-FITC with total internal reflection evanescent wave exciting and ICCD imaging. Results indicated that PS transferring is a popular phenomenon for the membrane of cultured endothelial cells. However, the percentage degree of PS transferring of the non-treated cells in static is 9.97%. As a single factor, shear stress of 6×10^{-5}, 12×10^{-5}, 24×10^{-5} N/cm^2 or Ligustrazine of 31.5, 63.0, 126.0 μg/ml reduced PS transferring significantly ($P<0.001$). The rate for the cells treated by Ligustrazine is lower than that of non-treated cells at the same level of shear stress. Moreover, the middle-dose combination of the two factors appears to be comparatively effective for lowering the rate. The results indicate that apoptosis of rCMEC might be restrained by a combination of certain level of shear stress with a suitable dose of Ligustrazine.

关键词

衰逝波(Evanescent wave); 川芎嗪(Ligustrazine); 剪应力(Shear stress); 内皮细胞(Endothelial cell); 磷脂酰丝氨酸(Phosphatidylserine)