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论文

Hcy对脐静脉内皮细胞eNOS和caveolin-1表达影响

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摘要:

目的 研究不同浓度同型半胱氨酸(Hcy)对静息和钙离子导体(A23187)激活状态下人脐静脉内皮细胞中内皮型一氧化氮合酶(eNOS)和小凹蛋白-1(caveolin-1)mRNA和蛋白表达的影响.方法 人脐静脉内皮细胞(HU-VECs)随机分4组:对照组、Hcy组(20、50、100、300μmol/L)、A23187(1μmol/L)组及上述浓度Hcy分别与A23187(1μmol/L)共同孵育组,测定各组eNOS和caveolin-1蛋白及mRNA表达情况,同时检测各组一氧化氮(NO)、丙二醛(MDA)含量和eNOS、超氧化物歧化酶(SOD)活力.结果 对照组caveolin-1蛋白表达为1.13,Hcy各组该蛋白为0.21～2.05,呈浓度依赖性增高,差异有统计学意义($F=30.163$,$P<0.05$);各组eNOSmRNA表达为1.80～2.08,差异无统计学意义;对照组eNOS活力和NO含量分别为1.20U/mL和122.41μmol/L,Hcy组eNOS活力和NO含量分别为0.65～0.74U/mL和65.33～98.91μmol/L,均呈浓度依赖性降低,差异均有统计学意义($F=5.12$、18.91,$P<0.05$).结论 Hcy可能通过增强caveolin-1蛋白表达,使其与eNOS藕联增加,进而抑制了eNOS活力.

关键词: 同型半胱氨酸 小凹蛋白-1 人脐静脉内皮细胞钙离子导体 A23187

Effects of homocysteine on expressions of eNOS and caveolin-1 in cultured human umbilical vein endothelial cells

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Abstract:

Objective To study the effects of homocysteine(Hcy)at different concentrations on expressions of endothelial nitric oxide synthase(eNOS)and caveolin-1 mRNA and protein in cultured human umbilical vein endothelial cells(HUVECs)in base and calcium ionophore activated state.Methods HUVECs were divided into four groups:control group,Hcy groups(at different concentrations of 20,50,100,and 300μmol/L),A23187 group(1μmol/L),and Hcy(at different concertrations of 20,50,100,and 300μmol/L)+A23187 group.After cultured for 24 hours,the expressions of eNOS and caveolin-1 mRNA and protein,nitric oxide(NO),malondialdehyde(MDA)content,eNOS,and superoxide dismutase(SOD)activity were detected.Results The expressions of caveolin-1 were 1.13 in control group and 0.21-2.05 in Hcy groups with a dose-dependent trend($P<0.05$).The expression of eNOS mRNA was between 1.80-2.08,without differences among the groups($P>0.05$).The eNOS and NO were 1.20 U/mL and 122.41μmol/L in the control group and 0.65-0.74 U/mL and 65.33-98.91μmol/L in Hcy groups,with dose-dependent trends($P<0.05$).Conclusion There is no relationship between decreased activity of eNOS induced by Hcy and eNOS expression.Hcy may increase the association of caveolin-1 and eNOS by enhancing the expression of caveolin-1 in HUVEC both in base and activated state,which could decrease the activity of eNOS.

Keywords: homocyeteine caveolin-1 human umbilical vein endothelial cell A23187

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