



17β-雌二醇抑制高同型半胱氨酸诱导破骨细胞Raw 264.7激活的作用研究

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The effects of 17β-estradiol attenuated homocystine-induced activation of Raw 264.7 cells

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摘要 探讨17β-雌二醇(17β-Estradiol, 17β-E₂)对高同型半胱氨酸(High Homocystine, HHcy)诱导的破骨前体细胞株Raw 264.7炎症因子释放的抑制作用。用同型半胱氨酸(Homocystine, Hcy)刺激Raw264.7细胞构建炎症模型,采用四甲基偶氮唑蓝比色法(MTT)检测17β-E₂对Raw 264.7细胞的活力影响,免疫荧光双标和RT-PCR方法检测不同浓度17β-E₂(1, 10 nmol/L和1μmol/L)对环氧合酶-2(COX-2)和细胞炎性蛋白酶诱导型一氧化氮合酶(iNOS)、细胞炎性因子肿瘤坏死因子-α(TNF-α)和白介素-1β(IL-1β)、炎性信号蛋白核因子-κB(NF-κB)蛋白与mRNA的表达变化。结果发现:不同浓度的17β-E₂在翻译水平和转录水平上明显抑制了Hcy诱导的细胞炎性蛋白酶COX-2和iNOS,细胞炎性因子TNF-α和IL-1β与炎性信号蛋白NF-κB的上调,并且COX-2和IL-1β蛋白和mRNA的表达呈剂量依赖性,上述结果表明17β-E₂可通过调控Hcy诱导的破骨前体细胞株Raw264.7细胞炎性因子释放从而抑制破骨激活,发挥抗骨质疏松的作用。

关键词: 17β-雌二醇 同型半胱氨酸 炎性因子 Raw264.7细胞 逆转录PCR

Abstract: To investigate suppressing effects of 17β-Estradiol(17β-E₂)in the activation of Raw 264.7 cells,the cells were treated with 17β-E₂ prior to Homocystine(Hcy)exposure,then the effects on the mRNA and protein levels of pro-inflammatory enzymes,cyclooxygenase-2(COX-2)and inducible nitric oxide synthase(iNOS),and pro-inflammatory cytokines,tumor necrosis factor-α(TNF-α),and interleukin-1β(IL-1β),inflammatory signaling proteins nuclear factor-κB(NF-κB)were analysed by reverse transcription-polymerase chain reaction(RT-PCR)and double-immunofluorescence labeling assay,and the effects of 17β-E₂ on viability of Raw 264.7 cells were measured by MTT assay.The results showed that 17β-E₂ had an effect on COX-2,iNOS,TNF-α,IL-1β,NF-κB protein and mRNA expression levels.Arising from the above,we think 17β-E₂ can restrain osteoclasts activity by means of regulation Hcy-induced pro-inflammatory mediators in Raw 264.7 cells,and exert its anti-osteoporosis actions.

Key words: 17β-Estradiol(17β-E₂) homocystin(Hcy) pro-inflammatory cytokines Raw 264.7 cells reverse transcription-polymerase chain reaction(RT-PCR)

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