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罗格列酮对泡沫细胞中胆固醇贮存与运输相关蛋白表达的影响(PDF) 分享到:

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Title: Effect of rosiglitazone on expression of acyl-coenzyme A cholesterol acyltransferase 1 and ATP-binding cassette transporter A1 in foam cells

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关键词: [罗格列酮](#); [泡沫细胞](#); [胆固醇](#); [动脉粥样硬化](#)

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摘要: 目的 观察罗格列酮对RAW264.7巨噬源性泡沫细胞形成中胆固醇含量及酰基辅酶A-胆固醇酰基转移酶-1 (acyl coenzyme A cholesterol acyl transfer enzyme 1, ACAT-1)、三磷酸腺苷结合盒转运蛋白A-1 (ATP combination box of transporter 1, ABCA-1) 表达的影响, 探讨罗格列酮对泡沫细胞形成的影响及可能的作用机制。

方法 在DMEM高糖培养基中培养RAW264.7巨噬细胞, 按完全随机分组方法分为: ①空白对照组 (常规培养基培养巨噬细胞); ②氧化低密度脂蛋白 (oxidized low density lipoprotein, oxLDL) 组 (用终浓度为30 mg/L的oxLDL孵育48 h); ③oxLDL+罗格列酮组 (分别用终浓度5、10、20 μmol/L的罗格列酮+30 mg/L oxLDL共同孵育48 h) (n=10)。采用油红O染色观察泡沫细胞, 胆固醇检测试剂盒测定各组细胞内总胆固醇 (total cholesterol, TC) 和游离胆固醇 (free cholesterol, FC) 的含量, Western blot法检测各组细胞ACAT-1和ABCA1的表达水平。结果 oxLDL组中大量泡沫细胞的胞质被油红O染色, oxLDL+罗格列酮组泡沫细胞胞质染色明显浅于oxLDL组的细胞; 与oxLDL组相比, oxLDL+罗格列酮组TC及FC显著降低 (P<0.05), 且呈浓

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度依赖性; Western blot检测结果表明,不同浓度(5、10、20 $\mu\text{mol/L}$) oxLDL+罗格列酮组ACAT-1蛋白表达分别为(0.94 \pm 0.11)、(0.86 \pm 0.13)、(0.58 \pm 0.12),与oxLDL组(1.19 \pm 0.12)相比有显著差异($P<0.05$),不同浓度oxLDL+罗格列酮组ABCA1蛋白表达分别为(0.72 \pm 0.08)、(0.91 \pm 0.15)、(1.15 \pm 0.11),与oxLDL组(0.63 \pm 0.05)相比有显著差异($P<0.05$),且呈浓度依赖性。结论 罗格列酮可能通过抑制ACAT-1的表达及促进ABCA-1的表达减少泡沫细胞形成,从而发挥其抗动脉粥样硬化的作用。

Abstract: **Objective** To investigate the effect of rosiglitazone on cholesterol content and the expression of acyl-coenzyme A cholesterol acyltransferase 1 (ACAT1) and ATP-binding cassette transporter A1 (ABCA1) in RAW264.7 macrophage-derived foam cells, and to explore the mechanism of rosiglitazone in foam cell formation. **Methods** Mouse macrophage RAW264.7 cells were cultured in high-glucose DMEM and were randomly divided into a control group, an oxidized low-density lipoprotein (oxLDL) group, in which cells were incubated with 30 mg/L oxLDL for 48 h, and an oxLDL+rosiglitazone group, in which cells were incubated with 30 mg/L oxLDL plus 5, 10 and 20 $\mu\text{mol/L}$ rosiglitazone for 48 h, respectively ($n=10$). The formation of foam cells were identified by oil red O staining. The levels of intracellular total cholesterol (TC) and free cholesterol (FC) in each group were determined by a cholesterol detection kit, and the expression of ACAT-1 and ABCA-1 protein was determined by Western blotting. **Results** Mouse macrophage RAW264.7 cells in the oxLDL group were stained by oil red O, but the color of the macrophages in the oxLDL+rosiglitazone group was lighter than that in the oxLDL group. Compared with the oxLDL group, the contents of intracellular TC and FC in the oxLDL+rosiglitazone group significantly decreased ($P<0.05$) in a dose-dependent manner. Western blot results showed the expression levels of ACAT-1 in the oxLDL+rosiglitazone group with different concentrations of rosiglitazone (5, 10 and 20 $\mu\text{mol/L}$) were (0.94 \pm 0.11), (0.86 \pm 0.13) and (0.58 \pm 0.12), respectively, which were significantly different from that in the oxLDL group (1.19 \pm 0.12) ($P<0.05$). The expression levels of ABCA-1 in the oxLDL+rosiglitazone group with different concentrations of rosiglitazone (5, 10 and 20 $\mu\text{mol/L}$) were (0.72 \pm 0.08), (0.91 \pm 0.15) and (1.15 \pm 0.11), respectively, which were also significantly different from that in the oxLDL group (0.63 \pm 0.05) ($P<0.05$). **Conclusion** Rosiglitazone may inhibit foam cell formation by decreasing the expression of ACAT-1 and increasing the expression of ABCA-1, which plays an important role in inhibiting atherosclerosis.

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