[1]李智耀,王奎栋,吴伟,等. Ⅰ型去乙酰化酶抑制剂MS-275对间充质干细胞C3H/10T1/2成脂分化的影响[J].第三军医大学学报,2012,34(05):415-418.

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Ⅰ型去乙酰化酶抑制剂MS-275对间充质干细胞C3H/10T1/2成脂分化的影响(PDF)

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Title: Class Ⅰ histone deacetylase inhibitor MS-275 inhibits adipogenic differentiation in mesenchymal stem cells C3H/10T1/2

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关键词: 间充质干细胞; 成脂分化; MS-275; 组蛋白去乙酰化酶

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摘要: 目的 探讨Ⅰ型去乙酰化酶抑制剂（histone deacetylase inhibitor，HDACi）MS-275对间充质干细胞（mesenchymal stem cells，MSCs）成脂分化的影响。 方法 利用噻唑蓝（MTT）和碘化乙啶（PI）染色结合流式细胞术（FCM）分别检测不同浓度MS-275对C3H/10T1/2细胞活性和细胞周期的影响；油红O染色分析MS-275对C3H/10T1/2细胞成脂分化能力的影响；同时应用实时定量PCR（real-time PCR）检测MS-275对成脂分化标志物：脂结合蛋白（aP2）、围脂素（perilipin）、脂联素（Adipoq），以及成脂分化关键转录因子：过氧化物酶体增殖物激活受体-γ2（PPAR-γ2）mRNA转录水平的影响。 结果 随着MS-275浓度升高，其对C3H/10T1/2细胞的抑制率也随着增高，IC_{50}约为8 μmol/L（P<0.05）；流式结果表明，MS-275将C3H/10T1/2细胞周期阻滞在G_0/G_1期；0.5 μmol/L的MS-275明显减少C3H/10T1/2细胞的脂滴积累；同时成脂分化标志物aP2、perilipin、Adipoq及成脂关键转录因子PPAR-γ2的转录水平也显著降低（P<0.05）。 结论 MS-275减弱了间充质干细胞成脂分化的能力，表明抑制Ⅰ型HDACs的活性可部分抑制MSCs向成脂分化。

Abstract: Objective To investigate the effect of MS-275, a class Ⅰ histone deacetylase inhibitor, on the adipogenic differentiation of mesenchymal stem cells C3H/10T1/2. Methods MTT assay and FCM analysis was used to detect the effect of MS-275 on cell viability and cell cycle of C3H/10T1/2 cells. The effect of MS-275 on the adipogenic capacity of C3H/10T1/2 cells were determined by Oil red O staining. Real-time quantitative polymerase chain reaction (real-time PCR) was employed to detect the mRNA transcription levels of adipogenic differentiation markers, including fat binding protein (aP2), perilipin, adiponectin (Adipoq) and adipogenic differentiation key transcription factor peroxisome proliferators-actiated receptor-gamma 2 (PPAR-γ2) after MS-275 treatment. Results MS-275 inhibited the viability of C3H/10T1/2 cells in a dose-dependent manner, and the IC_{50} was identified nearly to 8 μmol/L (P<0.05).FCM analysis showed that the cell cycle of C3H/10T1/2 was arrested at G_0/G_1 phase after MS-275 treatment. Oil red O staining showed that 0.5 μmol/L MS-275 significantly reduced lipid drops accumulation in C3H/10T1/2 cells, and the mRNA transcription levels of aP2, perilipin, Adipoq and adipogenic differentiation key transcription factor PPAR-γ2 were decreased correspondingly (P<0.05). Conclusion MS-275 attenuates the adipogenic differentiation capacity of mesenchymal stem cells, suggesting that inhibiting the activity of class Ⅰ HDACs may partially suppress mesenchymal stem cells into adipogenesis.

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