[1]王宏利,李鹏,刘强,等.唑来膦酸对破骨细胞生成及Syk基因表达的影响[J].第三军医大学学报,2013,35(16):1667-1670.

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唑来膦酸对破骨细胞生成及Syk基因表达的影响(PDF)

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Title: Effect of zoledronate acid on osteoclastogenesis and expression of spleen tyrosine kinase in a osteoclast-osteoblast co-culture system *in vitro*

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关键词: 唑来膦酸; 破骨细胞生成; 脾酪氨酸激酶; 抗酒石酸酸性磷酸酶

Keywords: zoledronate; osteoclastogenesis; spleen tyrosine kinase; tartrate-resistant acid phosphatase

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摘要: 目的 探讨唑来膦酸(zoledronate acid，ZOL)在共培养体系中对脾酪氨酸激酶(spleen tyrosine kinase，Syk)基因表达及破骨细胞(osteoclast，OC)生成的影响。方法 体外将小鼠颅骨成骨细胞与单核巨噬细胞RAW264.7共培养，将细胞分为2组：对照组及5×10^{-7} mol/L ZOL处理24 h组（ZOL组）。应用TRAP染色、牙本质吸收陷窝检测OC生成及骨吸收情况；Real-time PCR、Western blot、免疫荧光化学检测Syk基因表达。 结果 2组细胞均有TRAP染色阳性多核OC生成，并在牙本质磨片上形成吸收陷窝；但OC生成及吸收陷窝的数目和体积ZOL组均显著少于对照组(P<0.01)。Syk mRNA及蛋白水平在ZOL组也显著下降(P<0.01)。免疫荧光检测显示，Syk在对照组细胞质内强表达，并在细胞周缘形成肌动蛋白环样结构；而ZOL组Syk表达明显减弱，肌动蛋白环样结构消失。 结论 ZOL可显著抑制共培养体系中OC生成和骨吸收功能，这可能与其对Syk基因表达的抑制有关。

Abstract: Objective To determine the effect of zoledronate acid (ZOL) on the gene expression of spleen tyrosine kinase (Syk) and osteoclastogenesis in an osteoclast-osteoblast co-culture system. Methods Mice calvarial osteoblasts at passage 3 and RAW264.7 cells were co-cultured, and the cells were divided into 2 groups, control and ZOL treatment group (5×10^{-7} mol/L, for 24 h). TRAP staining and dentin resorption lacunae examination were used to detect

osteoclast formation and bone resorption. While, real-time PCR, Western blotting and immunofluorescent chemical assay were applied to measure Syk expression at mRNA and protein levels. Results TRAP positive cells and dentin resorption lacunae were observed in both groups. However, there were less TRAP positive multi-nucleated osteoclasts and resorption lacunae in the ZOL treatment group than in the control (P<0.01). ZOL treatment also resulted in a significant decrease in Syk mRNA and protein levels (P<0.01). Immunofluorescent staining showed that Syk was strongly expressed in the cytoplasm of control group and formed actin-like rings around the cell, but, it was only weakly expressed in treatment group but no actin-like ring was found. Conclusion In the co-culture system, ZOL significantly inhibits osteoclast formation and bone resorption in our co-culture system, which might be due to its inhibition on Syk expression.

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