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EphrinB2/EphB4在牙槽骨吸收-重建过程中的作用

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Title: Role of EphrinB2/EphB4 during alveolar bone resorption and remodeling

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关键词: [成骨细胞](#); [破骨细胞](#); [EphrinB2/EphB4](#); [牙槽骨吸收动物模型](#)

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摘要: **目的** 初步探讨EphrinB2/EphB4信号在牙槽骨吸收及骨重建过程中的表达及其意义。**方法** 采用RT-PCR及Western blot方法分别检测小鼠RAW264.7细胞体外诱导前后、小鼠MC3T3-E1细胞骨吸收上清处理前后EphrinB2及EphB4的表达情况。以免疫组化(S-P)法、免疫荧光等方法检测大鼠实验性牙槽骨吸收模型牙体牙周联合标本中EphrinB2、EphB4的表达情况。**结果** EphrinB2和EphB4在小鼠RAW264.7细胞、MC3T3-E1细胞中均有明显的表达,骨吸收上清作用于MC3T3-E1细胞后,分化的成骨细胞EphrinB2表达量(17.53 ± 0.43)较阴性对照组(15.67 ± 0.45)有显著升高($P < 0.01$);采用E-LPS注射法成功制备了稳定、可靠的实验性大鼠牙槽骨吸收模型,模型中免疫荧光结果可见EphB4和EphrinB2分别在牙槽骨缘成骨细胞及破骨细胞存在区的高信号。**结论** EphrinB2/EphB4信号参与了骨吸收-重建过程,成骨细胞和破骨细胞均可共表达EphrinB2/EphB4并可能存在成骨细胞间的EphrinB2/EphB4传导完成促进成骨活动。

Abstract: **Objective** To determine the potential effect of EphrinB2 and EphB4 in the alveolar bone resorption and remodeling. **Methods** Mouse RAW264.7 cell line was induced to osteoclast, and mouse MC3T3-E1 cell line was treated with bone resorption supernatant, which was collected before, then the expression of EphrinB2 and EphB4 at mRNA and protein levels were detected in the cells. An experimental rat model with alveolar bone resorption was established. The effect of established model were estimated through histological observation, tartrate

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phosphatase (TRAP) staining, and TRAP stained osteoclast count of the tooth-periodontal samples. Expression of EphrinB2 and EphB4 were detected by immunohistochemical assay and immunofluorescent assay. Results Both EphrinB2 and EphB4 were expressed in the RAW264.7 and MC3T3-E1 cells, and the protein level of EphrinB2 in the MC3T3-E1 cells cultured with osteoclast bone absorbent supernatant was significantly higher than that in negative group (17.53 ± 0.43 vs 15.67 ± 0.45 , $P < 0.01$). There were obvious alveolar bone resorption and TRAP stained osteoclasts in the samples of E-LPS induced SD rat model, and the resorption was observed for at least 20 d. EphrinB2 were significantly noticed in the osteoblasts and osteoclasts, and more EphB4 was found in the osteogenic zone than the bone absorption area. Conclusion EphrinB2/EphB4 participates in the process of alveolar bone resorption and remodeling. Co-expression of EphrinB2 and EphB4 in mouse osteoclasts and osteoblast-like cells may promote the osteogenesis by potential EphrinB2-EphB4 communication between osteoblasts.

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