A-2. Effect of citric acid and tetracycline HCl root conditioning on rhBMP-2 on human periodontal ligament cell and osteoblast cell line

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The goal of periodontal treatment is predictable periodontal regeneration. But until now, many products including GTR materials and growth factors is beyond of complete regeneration.

BMPs can induce ectopic bone formation when implanted into sites such as rat muscle and can greatly enhance healing of bony defects when applied exogenously. BMP can promote periodontal regeneration by their ability to stimulate new bone and new cementum formation. But little is known about optimal conditions required for the application. Root conditioning is used for bioactive root change so altered root surface provides a substrate that promotes chemotixis, migration and attachment of peridontal cells encouraging connective attachment to the denuded root surface. The aim of this study is to investigate whether the acid conditioning change effect of rhBMP-2 on human periodontal ligament cell and osteoblast cell line. 288 periodontally involved root dentin chips are divided into 6 groups, each 48, 1) control, 2) treated with BMP, 3) treated with citric acid 4) treated with citric acid+BMP 5) treated with tetracycline 6) TC+BMP Each group 12 root dentin is cultured with periodontal ligament cell and 12 is cultured with osteoblast. At day 2 and 7 protein assay, ALPase activity, cell count is measured. To investigate morphology of cultured cells, SEM was employed. Statistical analysis is performed with SPSS 8.0 either t-test or ANOVA test.

1. Protein assay and cell number is slightly decreased in CA+BMP group compared to CA group but it is not statistically significant.
2. ALP activity is much more increased in CA+BMP group compared to CA group so there is no statistically significance between BMP and CA+BMP group, and statistically significant compared to control group.
3. Cell number and protein assay is increased in TC group but 2day cell number of OB and protein assay of 7 day HPLC is increased significantly compared to BMP group.
4. ALP activity is much less than BMP group and CA group.
5. Cell number and protein and ALP activity is not much increased in TC+BMP group.
6. TC group and TC+BMP group shows cell morphology change in SEM.
7. Application of root surface with citric acid before BMP treatment might give better result in periodontal regeneration.