

R-20. Effect of bone morphogenic protein-7 in rat periodontal ligament cell

김경희, 정현주, 김영준, 김옥수

전남대학교 치과대학 치주과학교실

Background

Bone morphogenic protein-7 (BMP-7), a member of the transforming growth factor superfamily, stimulates osteoblast differentiation and bone formation. There are evidences supporting a direct participation of PDL cells on periodontal tissue regeneration. The purpose of this study was to evaluate the effect of recombinant human BMP-7 (rh BMP-7) on primary rat periodontal ligament cells in vitro, with special focus on the ability of bone formation.

Materials and Methods

Rat periodontal ligament cells were cultured with rh BMP-7 in concentration of 0, 10, 25, 50, 100 and 200 *ng/ml* for MTT assay. The cells were cultured with rh BMP-7 in concentration of 10, 25, 50 and 100 *ng/ml* and characterized by examining alkaline phosphatase activity at 3 and 5 days and the ability to produce mineralized nodules of rat periodontal ligament cells at 14 days.

Results

1. The cell activity was not reduced in the concentration of rh BMP-7 10~100 *ng/ml*, whereas the cell activity was reduced in the concentration of 200 *ng/ml* than the control at day 1 and 3 ($p < 0.01$).
2. At 3 and 5 day, alkaline phosphatase activity was significantly increased in the concentration of 50 *ng/ml* and 100 *ng/ml* ($p < 0.05$).
3. The percentage of mineralized bone nodule was more in the concentration of rh BMP-7 50 *ng/ml* and 100 *ng/ml* than the control ($p < 0.01$).

Conclusions

These results suggest that rh BMP-7 stimulate secretion of the extracellular matrix of rat periodontal ligament cells and may facilitate bone formation.