

## R-24. Effects of rhBMP-2, 4 and 7 on Bone formation in Rat Calvarial Defects

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### Background

The aim of this study was to evaluate and compare the osteogenic potential of rhBMP-2, 4 and 7 delivered using an absorbable collagen sponge (ACS) in a critical sized rat calvarial defect model

### Materials and Methods

Eight-millimeter calvarial critical sized defects were created in thirty male Sprague-Dawley rats. Animals were divided into 3 groups of 10 animals each. Defects were treated with 0.025mg/ml rhBMP-2/ACS, rhBMP-4/ACS, or rhBMP-7/ACS. Rats were sacrificed either 2 (5rats) or 8 (5rats) weeks after surgery. Results were evaluated histologically, histomorphometrically and immunohistometrically.

### Results

All the rhBMPs used in this study resulted in enhanced bone formation at both 2 and 8 weeks. The amount of defect closure, new bone area and bone density were similar in the three groups at each time point ( $P > 0.05$ ). In terms of bone density and new bone area, there were statistically significant differences between 2 and 8 weeks in all groups ( $P < 0.05$ ). Two-way ANOVA revealed that only time had influenced on the results ( $P < 0.05$ ). Irrespective of types of rhBMPs, the positive immunoreactions of osteopontin and osteocalcin were evident near the newly formed bone and in some of the cells included within it.

## Conclusions

Within the selected rhBMPs types used, there appears to be no specific differences in their osteogenic potential. All the rhBMPs used in this study may be considered effective factors for inducing bone formation.

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