

Oral Presentation I

Friday, November

09:00 - 17:30

< ORAL PRESENTATION I >

Chairman : Kwang-Shik Bae (Professor, Seoul National University)

09:30-10:20 (Room 401)

◆01

The application of chitosan to dental medicine

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Chitosan is applied as a dressing for oral mucous wound and a tampon following radical treatment of maxillary sinus. Furthermore, it is being investigated as an absorbing membrane for endodontic and periodontic surgeries. A few studies have reported osteoconduction and osteogenesis at the site of chitosan implant in vivo. However, compared with soft tissue healing processes, the mechanisms concerning effects of chitosan for biological mineralization have not yet been resolved. In the present study, we studied the gene expression pattern using cDNA microarray and RT-PCR analyses in hard tissue forming osteoblasts cultured with water-soluble and low molecular weight chitooligosaccharide. cDNA microarray analysis revealed that 16 genes were expressed at >1.5-fold higher signal ratio levels in the experimental group compared with the control group after 3 days. RT-PCR analysis showed that chitosan oligomer induced an increase in the expression of two genes, CD56 antigen and tissue-type plasminogen activator. Furthermore, the expression of mRNAs for BMP-2 was almost identical in the experimental and control groups after 3 days of culture, but slightly increased after 7 days of culture with chitosan oligomer. These results suggest that a super-low concentration of chitooligosaccharide could modulate the activity of osteoblastic cells through mRNA levels and that the genes concerning cell proliferation and differentiation can be controlled by water-soluble chitosan.

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