♦P5

Amputation level for hard tissue formation in pulp with tetracalcium / dicalcium phosphate compound.

M. Yoshikawa, T. Toda

Department of Endodontics, Osaka Dental University, Osaka, Japan

The most desirable healing process for endodontic therapy is apical closure by hard tissue such as dentine or cementum. Then, we estimated hard tissue conductivity of tetracalcium phosphate (4CP) / dicalcium phosphate (2CP) compound using mandibular first molars of SD rats. Residual pulp responses to the calcium phosphate compound were examined at several amputation levels of pulp.

2CP was purchased and passed through a 32-μm sieve. 4CP was obtained from a stoichiometric mixture of 2CP and calcium carbonate (Mol ratio: Ca/P = 2.0) by the dry synthetic method at 1,400(C for 8 hours. The particles obtained ranged in size from 0.6 to 44.0 (m with a 12 (m mean. Tested compound was kneaded an equimolar mixture of 4CP and 2CP, as Brown and Chow mentioned, with modified McIlvain' s buffered solution (P/L ratio = 1.2 g/ml). An access cavity of the mandibular right and left first molars were prepared using an engine driven #1/2 round bur while dropping sterilized distilled water on the occlusal surface of the tooth. The rats were divided into four groups of 10 each. In Group 1, pulp was removed with sterilized #1/2 round bur at root canal orifices and the compound was gently placed on the surface of amputated pulp. The pulp was amputated at middle portion of root canal in Group 2 and at apical portion in Group 3, using #15 to #25 hand reamers and the compound was placed on the residual pulp surface. In Group 4, pulp was amputated at the orifice and nothing was placed on the residual pulp. All the chambers were sealed hermetically with a light curing resin. Histopathological procedures were performed at 2 and 4 weeks postoperatively.

At four weeks, hard tissue deposited on the root canal wall (100%) in Group 1. In Group 2, hard tissue deposition was recognized at the apical root canal (65%). In Group 3, cementum-like hard tissue deposited around the apex (15%). Necrosis of residual pulp was observed in Group 4 (95%). It was suggested from the results of this study that undifferentiated mesenchymal cells in the pulp might be activated by the compound and they differentiated to odontoblasts which contribute to form hard tissue. We concluded that 2CP / 4CP compound induces dentin-like hard tissue in the radicular pulp away from the compound.

♦P6

The effect of taurine and alendronate on the osteoclast differentiated by the sonicated extracts of Porphyromonas Gingivalis in vitro

Hyung-Su Kim*, Seung-Jong Lee, Chan-Young Lee, Kee-Yeon Kum

Department of Conservative Dentistry, Yonsei University, Seoul, Korea

The objective of this study was to investigate the ability of alendronate and taurine in inhibiting in vitro osteoclast differentiation induced by bacteria. Whole cell sonicates of P. gingivalis were used as an osteoclast-stimulating factor in a mouse coculture system and differentiated osteoclasts were confirmed by tartrate-resistant acid phosphatase (TRAP) staining. Alendronate at the concentrations of 10-7, 10-6, and 10-5 M, and taurine at the concentrations of 4mM, 8mM, and 12mM were used. The cytotoxic effects of alendronate and taurine were examined using MTT assay. The amounts of interleukin-6 in culture supernatants were also measured using ELISA. The sonicates of P. gingivalis at the concentration of 0.01-0.1 $\mu g/ml$ significantly stimulated the formation of osteoclast ($P<0.05$). Alendronate (10-5 M) and taurine (12 mM) significantly suppressed the sonicate-stimulated osteoclast formation. In MTT assay, no cytotoxic effects were evident in all concentrations of alendronate and taurine. Alendronate and taurine did not affect the amount of IL-6 induced by P. gingivalis sonicates.

These data indicate that alendronate and taurine have inhibitory effects on bacteria-stimulated osteoclast formation in vitro and that this inhibitory mechanism is not related to the blocking of IL-6 production.