国際セッション口演

（Ａ会場）

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Tissue Engineering Strategy in Dental Implantology
Young-Dan Cho

Keywords: Drug Delivery System, Epigenetics, Osseointegration, Osteoblast, Tissue engineering

The way to accelerate bone regeneration and reduce the healing time for functional restoration after implant placement has been a challenge for dental clinicians. Tissue engineering of alveolar bone surrounding oral or dental implants is achieving the targeted and sustained delivery of growth factors. The aim of this study was to evaluate how the surface roughness of dental titanium (Ti) implants affects their osteogenic potential and enhanced potential of MC3T3-E1 pre-osteoblasts on the Ti disc surface with biomolecules.

Periodontitis and anemia of inflammation
Jianxia Hou

Keywords: Periodontitis, anemia of inflammation, Hepcidin, Ferritin

Periodontitis, as a chronic inflammatory disease, is the main cause for tooth loss and considered as one of threats to systemic health. Anemia of inflammation (AI) is associated with inflammatory diseases that cause prolonged immune activation and systemic inflammation. Earlier studies have suggested a tendency of AI in periodontitis patients, but the possible pathological mechanisms still remain unclear. The disorder of iron metabolism is the major pathogenic factor to AI. However, few studies have focus on the disorders of iron metabolisms in periodontitis. Here we analyzed indicators of inflammatory condition, iron metabolisms and anemia condition in both periodontitis patients and ligature-induced experimental periodontitis model. The results further confirmed the tendency of periodontitis-related AI and illustrated the characteristic iron metabolisms disorders of higher levels of serum hepcidin and ferritin, lower levels of serum iron and transferrin in periodontitis. Meaningfully, the results manifested the intervention effects of non-surgical periodontal therapy in preventing these disorders. The increased level of hepcidin and significant correlation between hepcidin and key indicators of iron metabolism indicated that hepcidin plays a pivotal role in the pathogenesis of periodontitis-related iron metabolisms and AI. These evidences will provide new insights into the systemic effects of periodontitis and might support the new hypotheses that periodontitis, like other chronic conditions, may tend towards iron metabolisms disorders and AI.

Synergistic effects of LFchimera and antibiotic against *Aggregatibacter actinomycetemcomitans*
Marie Rossini Carmela Torres Lachica

Keywords: *Aggregatibacter actinomycetemcomitans*, Antimicrobial peptides, Lactoferrin chimera

Background: *Aggregatibacter actinomycetemcomitans* is implicated as the causative agent for rapidly progressing and refractory periodontitis. Both diseases require adjunctive antibiotics in its treatment. However, adjunctive use of antibiotics has limitations and disadvantages including bacterial resistance. With the increasing development of antibiotic resistance, it is invaluable to search for novel anti-infective agents. Antimicrobial peptides (AMPs) have shown promising potential as a new therapeutic approach against bacterial infection.

Objectives: This study aimed to determine antimicrobial activity of different concentrations of conventional antibiotics minocycline (MH), doxycycline (DOX), and antimicrobial peptides LL-37, LL-31, Lactoferrin chimera (LFchimera) and Innate Defense Regulator Peptide 1018 (IDR-1018) against *Aggregatibacter actinomycetemcomitans* and to evaluate and compare *in vitro* activity of the most effective drug and peptide co-administration on adhesion and 1-day old biofilm of *A. actinomycetemcomitans* against agents used alone.

Methods: Antimicrobial activity of different concentrations of MH, DOX, LL-37, LL-31, LFchimera and IDR-1018 were determined using colony culturing assay. Then, *in vitro* activity of the most effective drug and peptide combination was evaluated by checkerboard technique. Confocal laser scanning microscopy was used to determine the effect of the drug and peptide co-administration on adhesion and structure of *A. actinomycetemcomitans* biofilm.

Results: Results revealed that the killing effects of all AMPs range from 13-100%. In contrast, MH and DOX showed no killing activity at 1 and 5μM. DOX has better killing activity than MH. LFchimera has the strongest killing amongst the peptides. Checkerboard technique revealed that combining DOX and LFchimera yielded synergism. Confocal laser scanning microscopy further showed that the combination of DOX and LFchimera caused significant reduction of bacterial adhesion and reduction of biomass, average biofilm thickness and substratum biofilm coverage of 1-day old biofilm compared to DOX and LFchimera alone.

Conclusion: LFchimera alone and in combination with DOX exhibited strong antibacterial and anti-biofilm property against *A. actinomycetemcomitans*.

A case of trying to save the tooth with severe endo-perio lesion using FGF-2
Fumihiko Kimura

Keywords: Periodontal disease, Endo-perio, Regenaration, FGF-2

Endo-perio lesions are defined as a proliferation of endo and perio lesions across both areas. The patient came to our office suffering severe periodontitis and one of his teeth showed endo-perio lesion. During the initial periodontal and endodontic treatment, a swelling developed and the tooth lost stability with increased movement. It might be defined as "Hopeless". This time I will show you how I tried to save the "Hopeless" tooth using FGF-2.