Host modulation therapy (HMT) for periodontitis: local (and Systemic) benefits

"Ultimately, it is the host's reaction to the presence of bacteria that mediates tissue destruction". Thus, the concept of host-modulation-therapy (HMT) as an adjunct to traditional periodontal treatment, to reduce host-derived pro-inflammatory mediators and suppress tissue-destructive enzymes, was introduced 25 years ago. As a “Founding” contributor to this concept, Golub et al discovered that tetracyclines (TCs), unexpectedly, can inhibit tissue (including bone)-destructive matrix metalloproteinases (MMPs), and by a mechanism unrelated to their antibacterial properties. They then developed NON-antibacterial tetracyclines (e.g., subantimicrobial-dose doxycycline; SDD) as HMT drugs to treat periodontitis and other inflammatory diseases. Two formulations have received international government approval (e.g., FDA) including: (1) Periostat, the first systemic HMT medication for the management of periodontitis; and (2) Oracea, for the treatment of chronic inflammatory skin disease. Subsequently, a series of chemically modified NON-antibacterial TCs (CMTs) were developed which enhanced their MMP-inhibiting properties. One of these, CMT-3, has been tested in patients with the cancer, Kaposi's sarcoma, and as a potential treatment for a fatal lung disease, acute respiratory distress syndrome. In addition, clinical studies demonstrated safety and efficacy of SDD formulations in oral inflammatory diseases (periodontitis, pemphigoid) and various medical diseases (e.g., rheumatoid arthritis, post-menopausal osteopenia and type-II diabetes). Recently, our lab has developed additional MMP-inhibitor drugs, the chemically-modified curcumins. This presentation will highlight the proven clinical efficacy of HMTs for periodontitis and their benefits for systemic health.

Biography

Ying Gu has received her DDS, PhD degrees and Resident Training from Stony Brook University School of Dental Medicine. She is currently an Associate Professor in the Departments of General Dentistry, and Oral Biology and Pathology at Stony Brook University. She is the Vice President-Elect of AADR Long Island Section. She has published book chapters and papers in reputed journals and is serving as the Reviewer of multiple journals.

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