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In Vitro Antimicrobial Potential of Hinokitiol Against Oral PathogensT. Shieh¹, L. Fuh², S. Hsia³, T. Wang⁴, Y. Shih⁵¹Dental Hygiene, China Medical University, Taichung, Taiwan²School of Dentistry, China Medical University, Taichung, Taiwan³School of Nutrition and Health Sciences, Taipei Medical University, Taipei, Taiwan⁴Tissue Bank, Chang Gung Memorial Hospital, Taoyuan, Taiwan⁵Institute of Oral Biology, Yang-Ming University, Taipei, Taiwan

Hinokitiol is a natural component isolated from *Chamacyparis taiwanensis*, which displays potent anti-microbial activity. It has been used in toothpaste and oral-care gel to improve the oral lichen planus and reduced oral malodor. The aim of the study was to evaluate the antimicrobial potential of hinokitiol against oral pathogens. The minimal inhibitory concentration (MIC) and minimal microbicidal concentration (MMC) of hinokitiol against methicillin-resistant *Staphylococcus aureus* (MRSA), *A. actinomycetemcomitans*, *S. mutans*, and *C. albicans* were determined by the agar and broth dilution method (MIC: 40-110 μM ; MMC: 50-130 μM); the paradoxical inhibition phenomenon (PIP) was observed in *A. actinomycetemcomitans* and *S. mutans*. The PIP can be described as microbial growth occurring in the presence of both high and low concentrations of a compound, between which microbial growth is inhibited. The PIP was confirmed using a kinetic microplate and inhibition zone methods. The PIP was also observed in MRSA. The low autolysin activity somehow correlated to the PIP positive. The cell diameter was determined by light microscope or scanning electron microscope. The diameter increased in all the pathogens, and the transition was inhibited in *C. albicans* following hinokitiol treatment. These data indicated that hinokitiol displays a high antimicrobial activity to oral pathogens, but it must still be analyzed carefully in greater detail before clinical application in oral disease prevention and therapy because PIP.