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Editorial

Oral Microbiome and Oral Health: Current Stage and Future Prospective

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Evidence concerning the oral microbiome has been exponentially increasing. Currently, more than 14,000 articles are available on the PubMed database. Two major infectious oral diseases are dental caries and periodontal disease. Through the identification of etiological bacteria for these two diseases, research on oral bacteria has mainly focused on cariogenic bacteria and periodontal pathogens. Although complete genome sequences of representative established strains of these bacteria have been elucidated, unknown pathogenicity and interactions with other pathogenic bacteria remain. Even within the same strain, genomes and their function within the strain exhibit a wide variety of diversity. Therefore, conventional oral bacterial analysis using clinical isolates should be continued [1]. In addition to the improvement of the conventional preventive methods, it is expected that novel mechanisms of pathogenicity and their prevention will be elucidated [2–5].

The use of next-generation sequencers has led to dramatic advances in the study of the microbiome in the human body. From a medical and human health perspective, oral bacteria other than cariogenic bacteria and periodontal pathogens will become a new focus. The presence of specific pathogenic bacteria in oral cavity can cause respiratory tract infection [6] and cancer [7].

The importance of oral microbiome management has been growing because of the increasing aging population, improved medical treatment prognoses, and infection control in immunocompromised patients. However, there is still insufficient evidence regarding the identification of oral bacteria for disease prevention and health promotion. Oral microbiome analysis using next-generation sequencing has the potential to be a breakthrough in elucidating unknown disease mechanisms and their prevention.

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