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研究題目：The establishment of bio-indicator to prevent dental caries in the children.

The Purpose :

The purpose of this study was to evaluate the distribution and frequency of oral *Veillonella* species in the saliva with different oral hygiene statuses, and the phylogenetic diversity of the unclassified *Veillonella* strains.

Materials and Methods :

107 subjects examined by using *Simplified Oral Hygiene Index* (OHI-S) were separated into three groups (good [$n=27$], moderate [$n=35$], and poor [$n=45$]). The oral *Veillonella* species was detected in the saliva by one-step PCR method. Also, the unclassified *Veillonella* strains were chosen for sequence analysis based on *rpoB* gene.

Results and Discussion :

Oral *Veillonella* isolates were twice more likely to be detected in subjects with poor oral hygiene than in those with good or moderate oral hygiene. The detection rates of *V. rogosae* decreased from good to poor oral hygiene groups (73.2, 69.6, and 58.6% , respectively). The detection rate of *V. parvula* was low in the good oral hygiene group, but increased in the moderate and poor oral hygiene groups (6.3, 7.0, and 16.9% , respectively). Although 167 of 1609 total strains were identified as member of genus *Veillonella*, but could not be classified as belonging to the 6 oral *Veillonella* species. The results also indicated that the ratio of some oral *Veillonella* species, such as *V. parvula*, *V. rogosae*, and unclassified strains could be useful as bio-indicators of the oral hygiene status in children (Fig. 1). The phylogenetic analysis based on *rpoB* gene sequence showed that these unclassified strains formed distinct cluster (Fig. 2). Furthermore, the phylogenetic study of these unclassified strains suggested a novel species of the genus *Veillonella*.

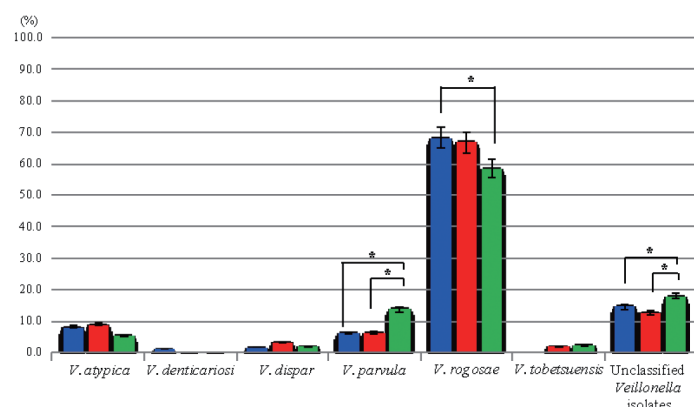


Figure 1. Mean percentages of the six oral *Veillonella* species (including unclassified *Veillonella* isolates belonging to the genus *Veillonella*).

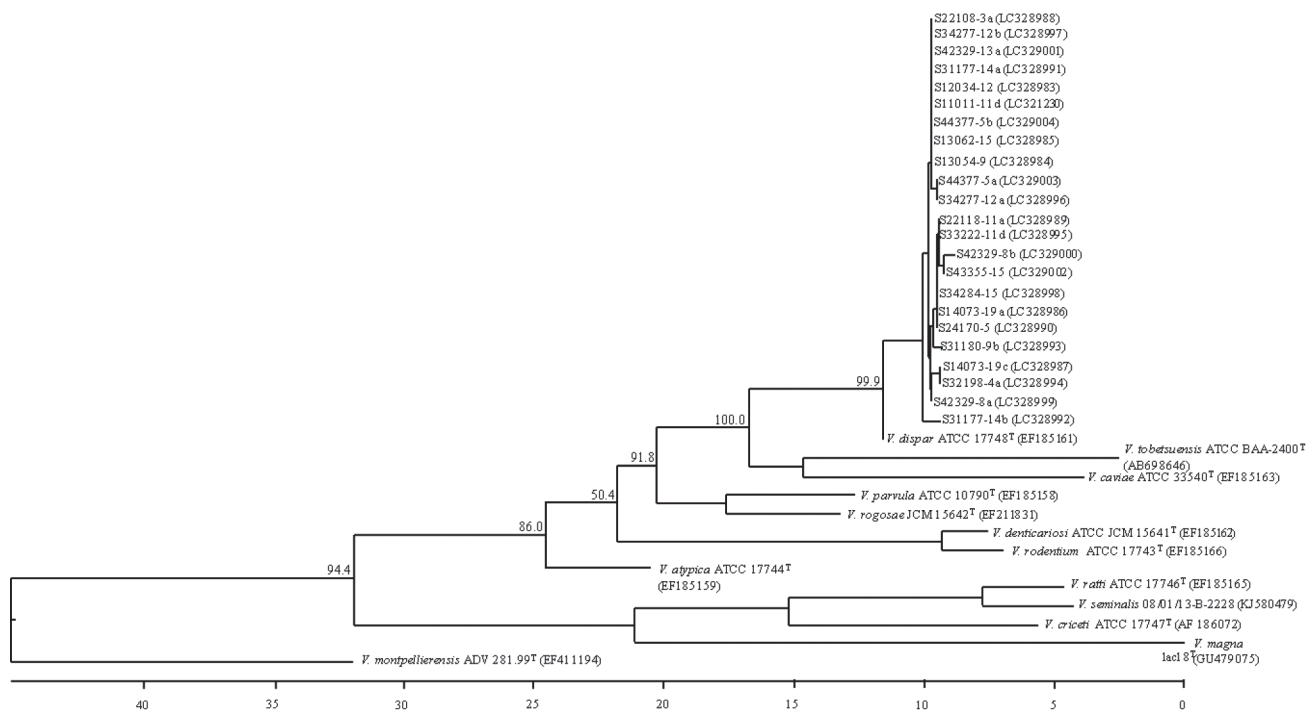


Figure 2. Neighbour-joining tree based on *rpoB* gene sequences showing the relationship between the 23 unclassified *Veillonella* strains and the type strains of the recognized members of the genus *Veillonella*. GenBank/EMBL/DDBJ accession numbers for *rpoB* gene sequences are given for each strain. Bootstrap values are indicated at corresponding nodes.

Presentation :

a. Original Paper

1. Izumi MASHIMA, YC Liao, Hiroshi MIYAKAWA, Citra Fragrantia THEODOREA, Boonyanit THAWEBON, Sroisiri THAWEBON, Frank A. SCANNAPIECO, Futoshi NAKAZAWA, *Veillonella infantium* sp. nov., an anaerobic, Gram-negative coccus isolated from tongue biofilms of Thai children, *International Journal of Systematic and Evolutionary Microbiology*, 2018, doi : [10.1099/ijsem.0002632](https://doi.org/10.1099/ijsem.0002632)
2. Citra Fragrantia THEODOREA, Izumi MASHIMA, Futoshi NAKAZAWA, Prospects of novel species of oral *Veillonella* in human saliva, *Advances in Biotechnology and Microbiology*, 2017, 5 (4).
3. Izumi MASHIMA, Citra Fragrantia THEODOREA, Boonyanit THAWEBON, Sroisiri THAWEBON, Futoshi NAKAZAWA, Exploring the Salivary Microbiome of Children Stratified by the Oral Hygiene Index, *PLOS ONE*, 2017, 12 (9) : e0185274. <https://doi.org/10.1371/journal.pone.0185274>.
4. Citra Fragrantia THEODOREA, Izumi MASHIMA, Boonyanit THAWEBON, Sroisiri THAWEBON, Futoshi NAKAZAWA, Molecular detection of oral *Veillonella* species in the saliva of children with different oral hygiene statuses, *Int Curr Microbiol App Sci.*, 2017, 6 (7) : 449-461. <https://doi.org/10.20546/ijcmas.2017.607.054>.
5. Izumi MASHIMA, Citra Fragrantia THEODOREA, Boonyanit THAWEBON, Sroisiri

THAWEBOON, Futoshi NAKAZAWA, Identification of *Veillonella* Species in the Tongue Biofilm by Using a Novel One-step Polymerase Chain Reaction Method, *PLOS ONE*, 2016,11 (6) e0157516. doi.org/10.1371/journal.pone.0157516.

b. Scientific Meeting

1. Citra Fragrantia THEODOREA, Ariadna Adisattya DJAIS, Izumi MASHIMA, Maiko OTOMO, Masato SAITOH, Futoshi NAKAZAWA, “Identification of Oral *Veillonella* species by using One-Step PCR Method – Isolated from Saliva of the Japanese Children”, The 36th of Dental Society of Health Sciences University of Hokkaido, March 10, 2018, Sapporo, Hokkaido, Japan.
2. Citra Fragrantia Theodorea, Izumi Mashima, Futoshi Nakazawa, “Bioindicator for Oral Hygiene Status”, Collaborative Symposium Universitas Indonesia–Niigata University, February 11–13, 2018, Jakarta, Indonesia.
3. Citra Fragrantia THEODOREA, Izumi MASHIMA, Futoshi NAKAZAWA, “The Phylogenetic Diversity of Unclassified *Veillonella* Isolates”, The 59th Annual Meeting of The Japanese Association for Oral Biology, September 16–18, 2016, Matsumoto, Nagano, Japan.
4. Citra Fragrantia THEODOREA, Izumi MASHIMA, Futoshi NAKAZAWA, “Oral *Veillonella* Profiles in Saliva of the Children with Different Oral Hygiene Statuses and Their Phylogenetic Diversity”, The 84th Annual Meeting of the Japanese Society for Bacteriology Hokkaido Branch. August 26, 2017, Hokkaido University Zoonosis Infection Research Center. Sapporo. Hokkaido. Japan.
5. Citra Fragrantia THEODOREA, Izumi MASHIMA, Futoshi NAKAZAWA, “*RpoB* and *DnaK* Sequences of Unidentified *Veillonella* Isolates”, 31st IADR–SEA & 28th SEAADE Annual Scientific Meeting, August 10–13, 2017, Taipei, Taiwan.
6. Izumi MASHIMA, Citra Fragrantia THEODOREA, Boonyanit THAWEBOON, Sroisiri THAWEBOON, Frank A. SCANNAPIECO, Futoshi NAKAZAWA, “*Veillonella* *childrens* sp. nov., an aerobic, gram negative coccus isolated from tongue biofilm of Thai children”, American Society for Microbiology, June 1–5, 2017, New Orleans, Louisiana, USA.
7. Citra Fragrantia THEODOREA, Izumi MASHIMA, Futoshi NAKAZAWA, “Correlation of oral *Veillonella* species with oral hygiene status”, 95th General Session and Exhibition of the International Association Dental Research (IADR) , March 22–25, 2017, San Francisco, California, USA.
8. Izumi MASHIMA, Citra Fragrantia THEODOREA, Futoshi NAKAZAWA, “Exploring the microbial community in saliva from children”, 95th General Session and Exhibition of the International Association Dental Research (IADR) , March 22–25, 2017, San Francisco, California, USA.
9. Citra Fragrantia THEODOREA, Izumi MASHIMA, Futoshi NAKAZAWA, “DNA

- sequence analysis of the novel *Veillonella* species isolated from saliva of Thai children”, The 90th Annual Meeting of Japanese Society for Bacteriology, March 19–21, 2017, Sendai, Miyagi, Japan.
10. Izumi MASHIMA, Citra Fragrantia THEODOREA, Futoshi NAKAZAWA, “Exploring the microbiota in saliva from children”, The 90th Annual Meeting of Japanese Society for Bacteriology, March 19–21, 2017, Sendai, Miyagi, Japan.
 11. Citra Fragrantia THEODOREA, Izumi MASHIMA, Futoshi NAKAZAWA, “Molecular identification of oral *Veillonella* species in the saliva with different Oral Hygiene Indexes”, The 35th of Dental Society of Health Sciences University of Hokkaido, March 4, 2017, Sapporo, Hokkaido, Japan.
 12. Citra Fragrantia THEODOREA, Izumi MASHIMA, Futoshi NAKAZAWA, “Distribution of Oral *Veillonella* species Associated with Oral Hygiene Status”, The 83rd Annual Meeting of the Japanese Society for Bacteriology Hokkaido Branch. September 19, 2016, Hokkaido University Graduate School of Dentistry Graduate School. Sapporo. Hokkaido. Japan.
 13. Izumi MASHIMA, Citra Fragrantia THEODOREA, Futoshi NAKAZAWA, “口腔 *Veillonella* 全 6 菌種同定 One Step PCR 法の開発”, The 83rd Annual Meeting of the Japanese Society for Bacteriology Hokkaido Branch. September 19, 2016, Hokkaido University Graduate School of Dentistry Graduate School. Sapporo. Hokkaido. Japan.
 14. Citra Fragrantia THEODOREA, Izumi MASHIMA, Futoshi NAKAZAWA, “The Distribution and Frequency of Oral *Veillonella* species in Saliva from Thai Children Associated with Oral Hygiene Status”, The 58th Annual Meeting of The Japanese Association for Oral Biology, August 24–26, 2016, Hokkaido, Japan.
 15. Izumi MASHIMA, Citra Fragrantia THEODOREA, Hiroshi MIYAKAWA, Futoshi NAKAZAWA, “The strategy for oral biofilm —The best use of oral *Veillonella*—”, The 58th Annual Meeting of The Japanese Association for Oral Biology, August 24–26, 2016, Hokkaido, Japan.
 16. Izumi MASHIMA, Citra Fragrantia THEODOREA, Futoshi NAKAZAWA, “The sequence analysis of the novel *Veillonella* species isolated from tongue biofilm of Thai children”, The 58th Annual Meeting of The Japanese Association for Oral Biology, August 24–26, 2016, Hokkaido, Japan.
 17. Citra Fragrantia THEODOREA, Izumi MASHIMA, Futoshi NAKAZAWA, “Distribution and Frequency of Oral *Veillonella* species in Saliva from The Children in Thailand”, The 89th Annual Meeting of Japanese Society for Bacteriology, March 23–25, 2016, Osaka, Japan.
 18. Citra Fragrantia THEODOREA, Izumi MASHIMA, Futoshi NAKAZAWA, “Distribution and Frequency of Oral *Veillonella* species in Saliva among 8 to 15-Year-old Children in Thailand”, The 34th of Dental Society of Health Sciences University of Hokkaido, March 5, 2016, Sapporo, Hokkaido, Japan.