

3653 Genotypic Diversity of Oral *Actinomyces naeslundii* from Children

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Objectives: Information on the genetic diversity of oral *Actinomyces* species isolated from children is sparse. Therefore we explored in particular the genetic characteristics of oral *A. naeslundii* genospecies 1 and 2 and their role in cariogenicity in a cohort of children.

Methods: A total of 85 *A. naeslundii* isolates were obtained from supragingival plaque of children aged 3-4 years either with or without active caries, namely *A. naeslundii* genospecies 1 (23 isolates), genospecies 2 (Catalase-negative: 32 isolates; Catalase-positive: 30 isolates). Polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP) with a pair of universal primers that targeted 16S rDNA and *MnI* digest and, randomly amplified polymorphic DNA (RAPD) with eight different custom synthesized primers were performed to generate their genetic profiles. The obtained PCR-RFLP and RAPD fingerprint patterns were then evaluated with a computerized Dendron program (Version 3.0, Solltech Inc., Oakdale, Ia, USA).

Results: 16S rDNA PCR-RFLP profile analyses revealed three genotypes for *A. naeslundii* genospecies 1, and 20 of 23 isolates belonged to one predominant genotype. However the genospecies 2 exhibited up to 20 disparate genotypes. Further investigation of the latter group indicated that the catalase-negative subgroup possessed a higher genetic diversity than the catalase-positive counterparts. All 30 catalase-positive isolates belonged to two major genetic clusters with many sharing identical genotypic profiles. When 85 genetic profiles of subjects with and without caries were analyzed, a close correlation between genetic profiles and caries activity was found in catalase-positive *A. naeslundii* genospecies 2. Further RAPD studies using arbitrary primers re-confirmed the above results.

Conclusions: The genetic profile analyses of *A. naeslundii* genospecies 1 and 2 obtained from caries-active/inactive cohorts tend to suggest that specific groups of genotypes of this species may contribute to the development of oral diseases, such as caries. (Supported by the RGC and CRCG in Hong Kong).

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