"Microbiological characterization of the biofilm on the carious surface in preschoolers aging 36 60 months with early childhood caries"

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Abstract

The aim of this study was to identify species of the microbiota present in biofilm at different stages of early childhood caries. Biofilm samples of 75 preschool children aging 36-60 months from Piracicaba-SP, were collected, identified among the different groups (no caries surface, white spot lesion and cavitated caries lesion) and stored under cooling. It was carried out DNA purification, quantification of samples by spectrophotometry (Nanodrop® 2000) and quantification of total bacteria using 16S gene by qPCR.

Key words: Early childhood caries, polymerase chain reaction, biofilm.

Introduction

Early childhood caries (ECC) is defined as the presence of one or more decayed (noncavitated or cavitated lesions), missing (due to caries), or filled tooth surfaces in any primary tooth in a child 71 months of age or younger¹ and due to its high prevalence in Brazil, is considered a public health problem. Several studies have assessed the microbiological etiology of ECC and showed that *S. mutans* is particularly related to the development of caries in children², but there are no studies showing the microbial profile of biofilm involved in the different stages of the disease. The aim of this study was to quantify and identify the microbiota on the tooth surface, at different stages of the disease, in order to increase the knowledge related to the progression of disease, allowing the implementation of strategies for the prevention and control. Thus, 75 preschool children aging 36-60 months were divided among the following groups: 1. Caries free children (CF) (n=20); 2. White spot lesion children (WSL) (n=9); 3. Cavitated caries lesion (CCL) (n=46).

Results and Discussion

Steps performed in this study:

- Approval by the Ethics Committee;
- Public schools selection;
- Children selection;
- Clinical examination and sample collection;
- DNA purification with phenol chloroform;

- Sample quantification in the spectrophotometer (Nanodrop® 2000) and dilution (10 ng / µL);
- qPCR (StepOne) - 16S gene for quantification of total bacteria;

Figure 1. Biofilm collection – White spot lesion

From the last listed step, the microbiota will be characterized in the different stages of the ECC. Bacteria to be evaluated are *Streptococcus spp*, *Streptococcus mutans*, *Lactobacillus*, *Scardovia wiggsiae*, *Scardovia wiggsiae* e *Slackia exigua*.

Conclusions

The laboratorial steps are being performed. It was necessary to readjust the originally proposed schedule, due to the difficulty of children selection with the initial stage of early childhood caries (white spot lesion).

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¹ Drury, T.F.; Horowitz, A.M.; Ismail, A.I. *et al.*, *J Public Health Dent.* **1999**, 192.

² Mattos-Graner, R de O.; Corrêa, M.S.; Latorre, M.R.; Peres, R.C. e Mayer M.P. *J. Public Health* **2001**, 161.