

## **Characterisation of dental biofilm formed *in situ* in the presence of different carbon and/or nitrogen sources**

Wojcik, I. R. and Benelli, E. M.

Depto. Bioquímica e Biologia Molecular – UFPR, Curitiba-PR, Brazil.

The dental biofilm consists of one or more communities of microorganisms, structurally and functionally organised. In healthy hosts, the biofilm composition remains stable. This balance can be broken by environmental changes that can lead to decay and/or periodontal disease. Individuals with a diet rich in carbohydrates, especially sucrose, are more susceptible to decay. These nutrients metabolism decreases the biofilm pH, selecting acidogenic and aciduric microorganisms as *Streptococcus mutans* and *Lactobacillus spp.* that will produce further acids and thus cause dental demineralisation. In contrast, individuals with chronic renal failure are less susceptible to decay, despite of a carbohydrate rich diet, probably because of high levels of nitrogen compounds observed in the saliva of these individuals. This project aims was to characterise the structure, the protein profile and determine the amount of *S. mutans* and *Lactobacillus spp.* in the dental biofilm formed *in situ* over bovine enamel in the presence of different carbon and/or nitrogen sources. The AFM images showed that the biofilms formed in the presence of ammonium or sucrose are structurally similar. In the other experimental conditions the morphological pattern and the roughness total average were different. The intracellular protein profile of the biofilms formed under different conditions was dissimilar, suggesting that the gene expression is distinctly regulated. However, these molecular changes did not always show up at the structural level. Although the *S. mutans* amount in the different experimental conditions was higher than the *Lactobacillus spp.*, both microorganisms are to be able to survive in the different tested conditions. This work will contribute to understand how the nutrients availability in the oral cavity interferes in the biofilm formation.