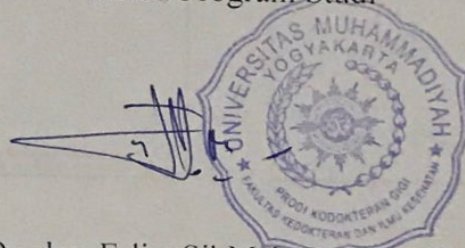


**LEMBAR PENGESAHAN  
BAHAN AJAR NON ISBN**

1	Judul	:	Biofilm and Periodontopathogen
2	Penyusun	:	drg. Dian YosiArinawati, MDS, PhD
3	NIK	:	19880106201410 173 215
4	Unit Kerja	:	Program Studi Kedokteran Gigi FKIK UMY

Yogyakarta, 29 Mei 2019  
Ketua Program Studi



(Dr. drg. Erlina Sih Mahanani, M. Kes)  
NIP/NIK: 19701014200410173067

## BIOFILM and PERIODONTOPATHOGEN

drg. Dian Yosi Arinawati, MDSc, PhD

Rabu, 24 April 2019  
13:00 WIB

Program Studi Kedokteran Gigi  
Fakultas Kedokteran dan Ilmu Kesehatan  
Universitas Muhammadiyah Yogyakarta

## DEFINITION OF DENTAL PLAQUE

- ▶ Dental plaque is a structured resilient, grayish-yellow structure that tenaciously adheres to the intra oral hard surfaces including removable and fixed restorations
- ▶ Dental plaque is also the term commonly used for the biofilm formed on teeth surfaces.
- ▶ Biofilms are defined as matrix embedded microbial populations, that develops on teeth immediately following cleaning of the teeth and directly influences the pattern of initial microbial colonisation.
- ▶ Plaque mainly comprises of bacteria, which are suspended in a matrix consisting of salivary glycoproteins and polysaccharides. This matrix gives it the ability to attach firmly to the tooth surfaces making it difficult to remove by rinsing or with the help of sprays. It is invisible to the naked eye and visualisation is possible only with the help of disclosing solutions.
- ▶ The dental plaque was considered to have similar structure as a biofilm.

Int J Pharm Bio Sci 2017, Apr; 8(2): (P) 379-384

## BACTERIA FOUND IN DENTAL PLAQUE

Table 1. Bacterial genera found in dental plaque

Gram positive	Gram negative
<i>Streptococcus</i>	<i>Neisseria</i>
<i>Peptostreptococcus</i>	<i>Escherichia</i>
<i>Micrococcus</i>	<i>Bacteroides</i>
<i>Propionibacterium</i>	<i>Campylobacter</i>
<i>Lactobacillus</i>	<i>Yersinia</i>
<i>Actinomyces</i>	<i>Parvimonas</i>
<i>Porphyromonas</i>	<i>Expansive</i>
<i>Actinobaculum</i>	<i>Porphyromonas</i>
	<i>Moraxella</i>
	<i>Porphyromonas</i>

Journal of Industrial Microbiology (1995) 15, 119-125  
DOI: 10.1007/BF02436752

## PREDOMINANT BACTERIA FOUND ON THE TOOTH SURFACE

Table 2. The predominant bacteria found on the tooth surface

Bacteria	Percentage of bacteria found on the tooth surface		
	Enamel	Approximal	Root
<i>Streptococcus</i>	45	35	35
<i>Actinomyces</i>	15	15	15
<i>Micrococcus</i>	10	10	10
<i>Propionibacterium</i>	10	10	10
<i>Peptostreptococcus</i>	10	10	10
<i>Neisseria</i>	10	10	10
<i>Porphyromonas</i>	10	10	10
<i>Expansive</i>	10	10	10
<i>Actinobaculum</i>	10	10	10

Journal of Industrial Microbiology (1995) 15, 119-125  
DOI: 10.1007/BF02436752

## DENTAL PLAQUE COMPOSITION

- ▶ 80-90% : water
- ▶ 70% of dry weight plaque is bacteria
- ▶ matrix of polysaccharides
- ▶ salivary proteins and glycoproteins

Int J Pharm Bio Sci 2017 Apr; 8(2): (P) 379-384

## MECHANISM OF DENTAL PLAQUE FORMATION

- (1) The formation of a conditioning film that supports bacteria on the tooth surface.
- (2) A non-specific reversible phase involving diffusion of dental microorganisms through salivary factors and the acquired enamel pellicle.
- (3) A site-specific specific water-chemical molecular interaction between primary bacterial colonisers and their receptor molecules in the acquired pellicle.
- (4) The attachment of secondary colonisers to already attached primary colonisers (co-aggregation).
- (5) Development of horizontal and vertical stratification within the developing biofilm, and increased bacterial numbers, and
- (6) Growth and the formation of a dense community.

Journal of Industrial Microbiology (1995) 15, 119-125  
DOI: 10.1007/BF02436752