

Weatherford Notes HANDOUT A

SOFT DEPOSITS ON TEETH (PLAQUE)

CLASSES OF DEPOSITS ON TEETH

1. UN-MINERALIZED (SOFT/ UNCALCIFIED)
2. MINERALIZED (HARD/CALCIFIED)

PELLICULE – DERIVED FROM SALIVA

QUICKLY REFORMS

ALWAYS MUCOPROTEIN COATING NEXT TO TOOTH

IS WATER SOLUBLE

STAINS EASILY

MATERIA ALBA – MIXTURE OF

1. UNORGANIZED BACTERIA
2. EPITHELIAL CELLS
3. SALIVARY COMPONENTS
4. DYING WHITE BLOOD CELLS

EASILY WASHED AWAY USING WATER

BACTERIAL PLAQUE – CONCENTRATED, ORGANIZED, ADHERENT, FILM OF BACTERIAL LIVING AND GROWING ON THE SURFACE OF TEETH

IS THE NECESSARY ETIOLOGICAL AGENT FOR BOTH PERIODONTAL DISEASE AND CARIES

BIOFILM – MATURE PLAQUE AND ITS COMPLEX STRUCTURE

ANTONIE VAN LEEUWENHOOK- FIRST MICROSCOPE

BACTERIA – MEANS SMALL ROD OR STAFF

COHN CATEGORIZED BACTERIA AS :

1. BACTERIA- SHORT RODS
2. BACILLI – LONGER RODS
3. SPIRILLA – SPIRAL FORMS

TAXONOMY – SCIENCE OF CLASSIFICATION ACCORDING TO A PRE-DETERMINED SYSTEM

STREPTOCOCCUS MUTANS – GRAM POSITIVE, FACULTATIVE, ANAEROBIC BACTERIA COMMONLY FOUND IN THE ORAL CAVITY – CONTRIBUTES TO CARIES

BACTERIA CLASSIFICATIONS- TAXONOMY

1. SHAPE
2. STAINING ABILITY
3. MOTILITY
4. GROWTH ABILITY IN DIFFERENT TEMPERATURES AND ENVIRONMENT

TWO COMMON BACTERIA ACCORDING TO SHAPE OF CELL BODY

1. FUSIFORM – CIGAR SHAPE/SPINDLE
2. FILAMENTOUS – THREAD/FILAMENT OR STRING

GRAM STAIN-

1. BLUE – SAMPLE IS GRAM POSITIVE
2. RED – SAMPLE IS GRAM NEGATIVE – ANAEROBIC, MORE VIRULENT, MORE AGGRESSIVE AND DESTRUCTIVE DISEASE

GENERAL STRUCTURE OF DENTAL PLAQUE:

BACTERIA CELL BODIES VARY IN:

1. SHAPE – COCCI (SPHERES), BACILLI (RODS), FILAMENTOUS (STRING) SPIRILLUM (COILED LIKE SPRING), SPIROCHETE (TWISTED ROPE)
2. SIZE – MUCH VARIATION
3. GROWTH REQUIREMENTS
4. VIRULENCE
5. MOBILITIES
6. CELL WALLS - CELL WALLS CHARACTERISTICS DETERMINE GRAM STAINING

INTERMICROBIAL MATRIX –

1. **SLIME LAYER** SECRETED BY BACTERIA
2. **LEVAN** – RESERVE FOOD SUPPLY
3. **DEXTRAN** – WATER INSOLUBLE GLUE

ETIOLOGY OF PERIODONTAL DISEASE IS MULTIFACTORIAL

ETIOLOGICAL FACTORS CLASSIFIED AS;

1. LOCAL
 - A. DENTAL PLAQUE BIOFILM – NECESSARY AND PRIME FACTOR
 - B. LOCAL CONTRIBUTING FACTORS

2. SYSTEMIC – BODY SYSTEM DISEASE AND DISORDERS

- A. HOST RESPONSES TO THE BACTERIA
- B. SYSTEMIC CONTRIBUTING RISK FACTORS – DISEASE AND LIFE STYLE CHOICES

NON SPECIFIC PLAQUE HYPOTHESIS – ALL PLAQUE BASICALLY THE SAME AND ACCUMULATION OF “TOO MUCH” CAUSED DISEASE

SPECIFIC PLAQUE HYPOTHESIS - COMPOSITION OF CERTAIN OR SPECIFIC BACTERIA ARE VIRULENT OR DISEASE PRODUCING

SEVERAL GRAM NEGATIVE BACTERIA HAVE BEEN IMPLICATED IN ETIOLOGY OF PERIODONTAL DISEASE;

- 1. PROPHYROMONAS (BACTEROIDS) GINGIVALIS
- 2. BACTEROIDES (TANNERELLA) FORSYTHUS
- 3. AGGREGATIBACTER (ACTINOBACILLUS)
ACTINOMYCETEMCOMITANS - Known as A. a.

BACTERIAL – HOST INTERACTION HYPOTHESIS

- 1. BODY’S RESPONSE
- 2. VIRULENCE OF INFECTING BACTERIA DETERMINES THE TISSUE DESTRUCTION OF THE PERIODONTIUM

VIRULENCE – REFERS TO DESTRUCTIVE ABILITY OR ABILITY TO CAUSE HARM MOST VIRULENT PERIODONTAL PATHOGENIC BACTERIA ARE THE GRAM (-) NEGATIVE ANAEROBIC ONES

TO DESTROY BONE THE BACTERIA MUST NOT BE MORE THAN 3mm AWAY FROM THE BONE

SUBSTANCES PRODUCED AND REALEASED INTO TISSUE BY BACTERIA

- 1. **ENDOTOXINS**- MAJOR COMPONENT OF CELL WALL OF GRAM (-) BACTERIA RELEASED WHEN CELL WALLS BREAK UP
- 2. **EXOTOXINS** – HARMFUL PROTEINS RELEASED FROM BACTERIA CELLS TO ACT AT A DISTANCE
- 3. **ENZYMES** – MANY KINDS – SOME DESTROY COLLAGENS

IT TAKES MORE ANTIBIOTIC DOSE TO KILL BACTERIA IN A BIOFILM THAN FREE FLOATING BACTERIA

BACTERIAL PLAQUE IS:

1. A WATER-INSOLUBLE, THIN, TRANSLUCENT BIOFILM ON SURFACE OF TEETH
2. COMPOSED OF VARYING BACTERIAL TYPES
3. DEPENDING ON AGE, ENVIRONMENT, AND OTHER FACTORS OF BACTERIA

**PLAQUE IS NECESSARY AND PRECEDES CALCULUS FORMATION
PLAQUE EXISTS BOTH SUPRA AND SUBGINGIVALLY**

SUBGINGIVAL PLAQUE MAY BE ATTACHED

1. TO TOOTH SURFACE
2. TO EPITHELIAL LINING OF POCKET
3. LOOSE OR UNATTACHED BETWEEN TOOTH AND POCKET EPITHELIUM

SUGAR GREATLY AFFECTS QUALITY AND QUANTITY OF CARIOGENIC FLORA

EFFECTS OF AGE AND ENVIRONMENT ON DEVELOPMENT OF PLAQUE

1. PLAQUE AGES AND THICKENS
2. FLORA PROCEEDS FROM AEROBIC TO ANAEROBIC
3. CHANGES FROM GRAM POSITIVE TO GRAM NEGATIVE
4. VIRULENCE INCREASES AS THESE CHANGES OCCUR

PLAQUE NEEDS TO BE COMPLETELY REMOVED AT LEAST ONCE A DAY

PLAQUE INDEX OF SILNESS AND LOE

- 0- NO PLAQUE
- 1- NO VISIBLE PLAQUE, BUT THIN FILM AT GINGIVAL MARGIN DETECTABLE ONLY RUNNING PROBE ACROSS SULCUS AND TOOTH SURFACE
 - 2- MODERATE AMOUNT ALONG GINGIVAL MARGIN, VISIBLE TO EYE, INTERDENTAL SPACE FREE OF PLAQUE
 - 3- HEAVY PLAQUE FILLS GINGIVAL SULCUS AND INTERDENTAL SPACES

