



Caries Activity And Caries Susceptibility Test



Dr. M.G.R

EDUCATIONAL AND RESEARCH INSTITUTE

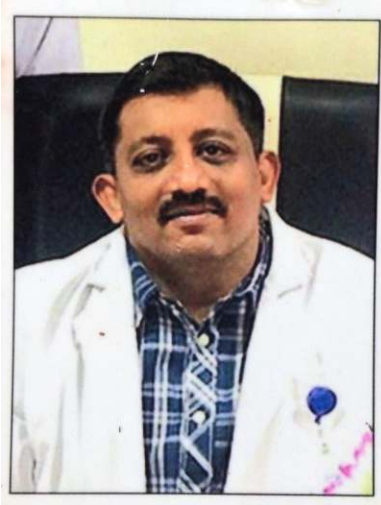
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Department :Pedodontics
Topic : Caries Activity And
Caries Susceptibility Test
Staff Name : Dr. Joyson
Moses



Dr. M.G.R.
EDUCATIONAL AND RESEARCH INSTITUTE
(Deemed to be University)

Maduravoyal, Chennai - 600 095. Tamilnadu. India.

(An ISO 9001 : 2015 Certified Institution)

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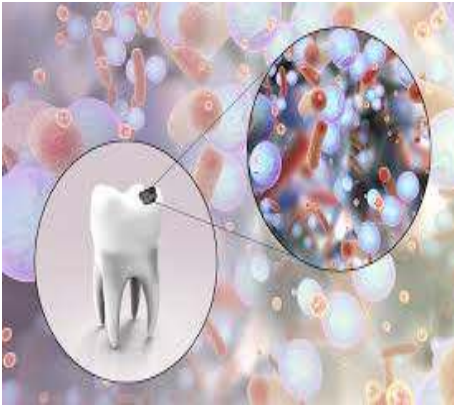
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Subject :

Topic :

Speaker :



Caries Activity And Caries Susceptibility Tests



INTRODUCTION

- Caries lesions are detected by a clinical examination coupled with bite wing radiographs
- A clinical examination neither predicts caries activity nor it indicates a patient susceptibility to dental caries
- A simple reliable laboratory test that could assess this would facilitate the clinical management of patients



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- Dental caries is the irreversible microbial disease of the calcified tissues of the teeth , characterized by demineralization of the inorganic portion and distruction of the organic substance of the tooth , which often leads to cavitation

SHAFER IN 1993



Caries activity

- Refers to the increment of active lesions (new and recurrent lesions) over a stated period of time. Caries activity is a measure of speed of progression of carious lesion

Caries susceptibility

- Refers to the inherent tendency of the host and target tissue , the tooth to be affected by the carious process



PURPOSE OF CARIES TESTS

- Identify high risk groups
- Determine the need for personalized preventive measures
- Monitor the effectiveness of oral health education program
- Motivate the individual



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- It should be reproducible and valid
 - Should be inexpensive , non-invasive , applicable to any setting
 - Results should be obtained rapidly, within hours or few days
 - **It must** be simple
 - There should be a good correlation between the caries activity scores and actual caries development



Huh?

Subject :

Topic :

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CLASSIFICATION

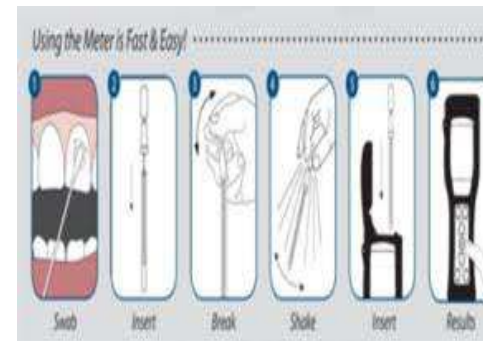
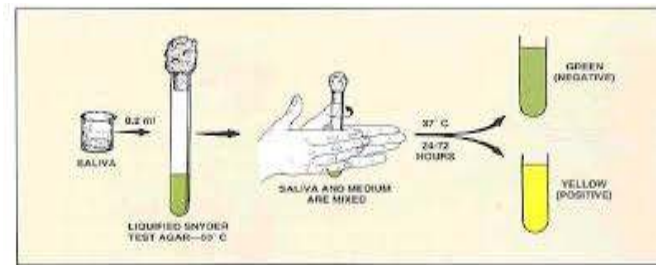
MICROBIAL TEST

- Synder test
- Albans test
- Swab test
- Lactobacillus count test
- Mutans group of streptococci screening test
- Tooth pick method
- Tongue blade method



EVALUATING SALIVARY DEFENCE

- Salivary reductase test
- Dentobuff test
- Calcium dissolution test
- Caries reactivity test
- Cariostat test



- The number of acidogenic and aciduric bacteria is estimated by counting the number of colonies appearing in the tomato peptone agar after inoculation with a sampe saliva
- Saliva is collected by chewing parrafin before breakfast
- The specimen is shaken and sample is withdrawn
- Dilute and the undiluted samples are spread evenly over a rogosa's SL agar plate
- The plate is intubated for 4 days and no. of lactobacillus colonies developed ar

RESULTS:

Number of lactobacilli per ml of saliva	Caries activity
0-1000	Little or none
1000-5000	Slight
5000-10,000	Moderate
>10,000	Marked



PRINCIPLE :

Measures the ability of salivary microorganisms to form organic acid from a carbohydrate medium.

ADVANTAGES:

1. Simple
2. Inexpensive

DISADVANTAGES:

1. Time consuming
2. Color changes are not very clear



- The medium contains an indicator dye, Bromocresol green.
- This dye changes color from green to yellow in the range of pH 5.4 to 3.8

PROCEDURE

- Saliva is collected before breakfast by chewing paraffin
- A tube of Snyder glucose agar is melted and then cooled to 50°C
- Saliva specimen is shaken vigorously for three minutes. 0.2ml of saliva is pipetted into the tube + mixed by rotating tube
- Agar is allowed to solidify in the tube and incubated at 37°C
- Color change of indicator observed in 24, 48, 72 hours .

Time	Color	Caries susceptibility
24 hours	Yellow	Marked
48 hours	Yellow	Definite
72 hours	Yellow	Limited



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- It is a modification of synder's test
 - Snyder glucose agar suspension (melted) is distributed using about 5ml per tube.
 - Tubes autoclaved for 15 minutes, allowed to cool in a refrigerator.
 - At the time of test 5ml of semisolid agar is removed from the refrigerator but is not heated
 - The patient is asked to spit unstimulated saliva directly in to the tube. The tube is incubated for 4 days
 - The colour changes are recorder daily



- Tubes observed daily for color change from blue-green to definite yellow with pH decrease

Color	Time	Score	Caries activity
Blue	15 min.	1	Non conductive
Orchid	15 min.	2	Slightly conductive
Red	15 min.	3	Moderately conductive
Red	Immediately	4	Highly conductive
Pink or White	Immediately	5	Extremely conductive



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- Collection of saliva is not necessary
 - Valuble in evaluating caries activity in very young children
 - Principle is same as synder test
 - The oral flora is sampled by swabbing the buccal surface of tooth with cotton
 - Incubated in a medium for 48 hours
 - Marked caries activity - ph <_ 4.1
 - Active - ph is 4.2 to 4.4
 - Slightly active - ph is 4.5 to 4.6



- Measures the activity of reductase enzyme present in salivary bacteria
- The sample is mixed with fixed amount of diazo-re-sor-cinol
- The change in color after 15 min is taken as a measure of caries activity



PROCEDURE

- Saliva obtained by chewing on a piece of paraffin
- The saliva is then spat out in a cup or tube.
- When the saliva reaches the calibration mark(5ml),reagent cap is replaced Sample is mixed with a fixed amount of diazoresourcinol
- Change in color after 30 seconds and after 15 minutes is taken as a measure for caries activity

Color	Time	Score	Caries activity
Blue	15 min.	1	Non conducive
Orchid	15 min.	2	Slightly conducive
Red	15 min.	3	Moderately conducive
Red	Immediately	4	Highly conducive
Pink or White	Immediately	5	Extremely conducive



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- This test is based on the fact that when glucose is added to saliva containing powdered enamel , organic acids are formed.
 - Organic acid decalcifies the enamel , resulting in an increase in the amount of soluble calcium
 - The extend of increase of caries is a direct measure of caries activity



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- Flow rate is determined by collecting paraffin stimulated saliva in a test tube over 5 mins
 - Severely decreased flow is related to caries susceptibility
 - As salivary flow rate decreases viscosity increases



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- Aqueous methyl red is applied to the surface of the tooth with dropper
 - Red colour is developed in the area of plaque accumulation
 - This is interpreted to patient as evidence of continuous acid formation
 - This indicator dye changes colour in the pH range from 6.3 (yellow) to 4.2 (red)



- PRINCIPLE **CARIOSTAT TEST**

- Designed to measure the pH decrease caused by Streptococcus mutans in the plaque sample

- PROCEDURE

- Medium used is semi synthetic liquid indicators like Bromocresol Green & Bromocresol purple Plaque samples inoculated on cariostat medium & incubated at 37 ° C for 48 hours

- Enables some acid production & acid tolerating bacteria to survive in medium.

- So the ability of acid production can be measured

pH	COLOR	CARIES ACTIVITY
6.1 ± 0.3	BLUE	CARIES INACTIVE
5.4 ± 0.3	GREEN	SLIGHT CARIES
4.7 ± 0.3	YELLOW GREEN	MODERATE CARIES
4.0 ± 0.3	YELLOW	MARKED CARIES

Subject:

Topic:

Speaker:



CARIES RISK ASSESSMENT TOOL (CAT)

- Developed by American academy of pediatric dentistry in 2006
- Depending on the age of the children CAT incorporates 3 factors and clinical findings
- Biological
- Protective
- Clinical findings



Caries risk assessment tool- age 6 months through 35 months

FACTORS	low	moderate	high
Caries activity	none	With in 24 months	With in 12 months
Demineralized areas	No white spots	1 white spot	>1 white spot
Family history- mother, father, siblings	No caries activity	Low caries rate	High caries rate
Presence of plaque	none	moderate	Visible plaque on anterior teeth
Fluoride exposure	optimal	Low to optimal	low
Sugar consumption	With meals only	1-2 b/w meals	>3 b/w meals
Dental home	Established	Irregular use	none
Special conditions			Enamel hypoplasia impaired salivary flow

Subject :

Topic :

Speaker :



Caries risk assessment tool- age 3 through 5 years

FACTORS	low	moderate	high
Caries activity	none	With in 24 months	With in 12 months
Demineralized areas	No white spots	Inactive white spot	Active white spots
Parent/primery caregiver	No decay	Low caries rate	High caries rate
Family history	No caries activity	Low caries rate	High caries rate
Presence of plaque	none	moderate	Visible plaque on anterior teeth
Fluoride exposure	optimal	Low to optimal	low
Sugar consumption	With meals only	1-2 b/w meals	>3 b/w meals
Dental home	Established	Irregular use	none
Special conditions		Special needs patient	Enamel hypoplasia impaired salivary flow



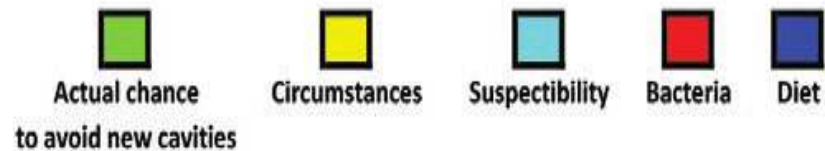
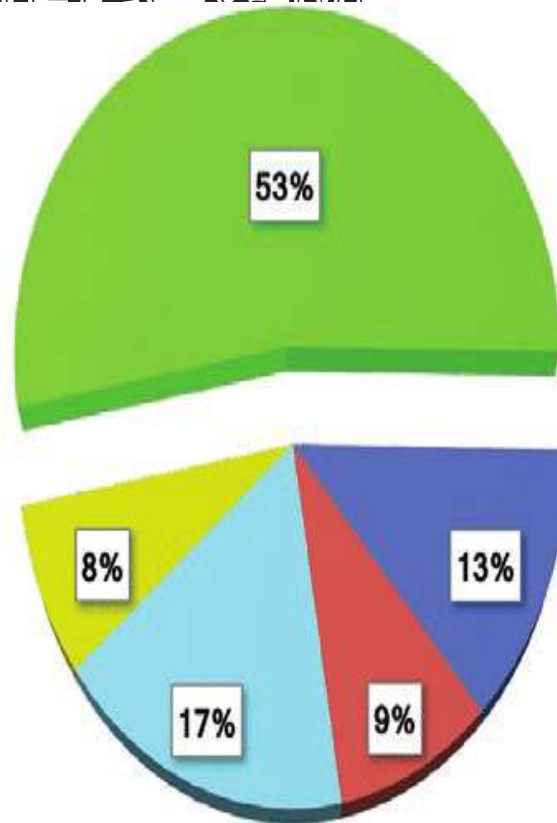
Caries risk assessment tool- age 6 through 20 years

FACTORS	low	moderate	high
Caries activity	none	Incipient lesion	>1 cavitated lesion
Demineralized areas	No white spots	Inactive white spot	Active white spots
Parent/primary caregiver	None	Low caries rate	High caries rate
Restoration or missing teeth	None	1 or 2 restorations with in last 36 mnths	3 or more restorations or extracted tooth in last 36 months
Presence of plaque	none	moderate	heavy
Fluoride exposure	optimal	Low to optimal	low
Sugar consumption	With meals only	1-2 b/w meals	>3 b/w meals
Dental home	Established	Irregular use	none
Special conditions		Dental/ ortho appliance Special needs patient	Enamel hypoplasia impaired salivary flow



CARIODAM

- Is a new way to illustrate the interaction between caries related factors.
- This educational interactive programme has been developed for a better understanding of the multifactorial aspects of dental caries and to act as a guide in the attempts to estimate the caries risk



Caries experience	2	(0-3)
Related diseases	1	(0-2)
Diet, contents	2	(0-3)
Diet, frequency	1	(0-3)
Plaque amount	1	(0-3)
Mutans streptococci	1	(0-3)
Fluoride program	2	(0-3)
Saliva secretion	-	(0-3)
Buffer capacity	-	(0-2)
Clin. judgement	1	(0-3)

CONCLUSION

Caries risk assessment as a prerequisite for appropriate preventive and treatment intervention decision and provide practical information on how general practitioners can incorporate caries risk assessment into management of caries



THANK YOU



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