

DISCLOSING AGENTS

DEPARTMENT OF PERIODONTOLOGY



Objectives

- 1. identify to eliminate the plaque
- 2. learn how to use plaque disclosing agents
- 3. to interpret the areas of new and mature plaque formation



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INTRODUCTION

- Dental plaque is a structured, resilient yellow-grayish substance that adheres tenaciously to the tooth surfaces, restorations and different removable and fixed prosthetic appliances.
- Deposition of plaque causes inflammatory changes on the periodontium which can lead to destruction of tissues and loss of attachment. Usually, dental plaque is transparent, colourless and not easily visible. Hence, an individual is not generally aware of the amount or the location of dental plaque in his oral cavity.
- Therefore, it is necessary to detect the plaque containing areas of oral cavity using disclosing solutions.
- A disclosing agent causes staining of bacterial plaque that can be an aid for patients to develop an efficient system of plaque removal.



DEFINITION

- 1. According to Wilkins (1959), a disclosing agent is a selective dye in solution, tablet, or lozenge form used to visualize and identify dental biofilm on the surfaces of the teeth.
- 2. According to Raybin (1943), disclosing agent is a solution which when applied on the tooth, makes visible by staining roughness and foreign matter on the tooth. (Foreign matter is meant to include mucinous plaque, calculus and material surfaces)



MECHANISM OF ACTION

- Disclosing solutions work by changing the colour of dental plaque so that it contrasts with the white tooth surface. Dental plaque has the ability to retain a large number of dye substances which can be used for disclosing purposes.
- This property is related to interaction, because of the polarity difference between the components of the plaque and the dyes. The particles are bound to the surface by electrostatic interaction (proteins) and hydrogen bonds (polysaccharides)



- It was also seen in two tone disclosing agent that the metachromasia of dental plaque stained with Two-tone disclosing agent was a result of a diffusion phenomenon in which one component diffuses more readily than another from plaque, rather than from any chemical changes that might occur in vivo



TYPES OF DISCLOSING AGENTS

- Over the time, a variety of dyes have been used which are classified as follows.
- A. Iodine Preparations.
 - 1. Skinner's iodine solution
 - 2. Diluted tincture of iodine
- B. Mercurochrome Preparations:
 - 1. Mercurochrome solution 50%
 - 2. Flavoured mercurochrome disclosing solution
- C. Bismark Brown
- D. Merbromin
- E. Erythrosine (FD & C Red No. 3/ No. 28)
- F. Fast Green (FD & C Green No. 3)
- G. Fluorescein (used with ultraviolet light source to make the agent visible)
- H. Two Tone Solutions (FD & C Blue No. 1, FD & C Red No. 3)
- I. Basic Fuchsin
- J. Crystal Violet



PROPERTIES

1. Colour intensity	A distinct staining of deposits should be evident. The colour should contrast with normal colours of the oral cavity.
2. Duration	The colour should not be rinsed off with ordinary rinsing methods or be removable by the saliva for the period of time required to complete the examination and instruction procedures.
3. Taste	The patient should not be made uncomfortable by an unpleasant or highly flavoured substance. The solution should be tasteless or pleasant enough to encourage patient cooperation.
4. Mucosal irritation	The agent should not irritate the oral mucosa
5. Diffusibility	The solution should be thin enough so that it can be applied readily to the exposed surfaces of the teeth yet thick enough to impart an intensive colour to the plaque.
6. Antiseptic action	It has been proposed that if a disclosing solution can have antiseptic property, then it can be able to protect an open wound in the oral mucosa from unnecessary contamination during the procedure



APPLICATION

- Disclosing solutions can be applied by the following methods:
- 1. Solutions for direct application: At first, the patient is asked to rinse his mouth well to remove all the food substances and heavy saliva. Then the water based lubricant is applied cautiously so that the lips don't get stained. After that, the teeth are made air dried. Now, the solution is carried to the teeth with the help of swab or small cotton pellet. The solution is applied to all the crowns of the teeth. Then the patient is instructed to spread the agent over all the surfaces of his teeth with his tongue. Finally, the distribution of the agent over the tooth surfaces is examined and the patient is advised to rinse his mouth.



- 2. Rinsing agents: A few drops of concentrated preparation are placed in a paper cup and water is added for the appropriate dilution. Instruct the patient to swish and rinse with the solution so that it is applied on all tooth surfaces.
- 3. Tablets or wafer: Patient should chew the wafer or tablet. Swish it around for 30 to 60 seconds and rinses.
- 4. Dentifrices: Plaque disclosing agents can be incorporated in dentifrices and thus they can help in dental plaque observation





• INTERPRETATION OF FINDINGS

- 1. Clean tooth surfaces do not absorb the colouring agent. When pellicle and bacterial plaque are present, they absorb the agent and are disclosed.
- 2. Pellicle stains as a thin relatively clear covering, whereas bacterial plaque appears darker, thicker and more opaque.



USES

- 1. To evaluate the effectiveness of oral hygiene maintenance
- 2. For the preparation of plaque indices
- 2. To personalise the patient instruction and motivation
- 3. For self-evaluation by the patient
- 4. For plaque control in special children
- 5. In research studies with regard to the effectiveness of plaque control devices like toothbrushes, dentifrices etc.
- 6. To evaluate the amount of removal of biofilm during and after respective periodontal surgeries.



ADVANCEMENTS

- CARIES ASSESSMENT
- PHOTODYNAMIC THERAPY
- TWO -TONE DYE (2 COLOURS)-pink for new plaqu formed and purple for old mature plaque identification.



CONCLUSION

- Dental plaque identification with the help of disclosing agents is one of the easiest and fastest ways to diagnose dental plaque. It favours the subsequent removal of the plaque.
- There is no conclusive evidence that disclosure of plaque in dental office aids patient motivation by improving subsequent plaque control, nor there is evidence that home use of a disclosing agent improves the standard of plaque control.
- Although, the motivation generated by the quality of professional supervision of oral hygiene may play a more relevant role in the efficacy of dental plaque removal than the use of a disclosing factor.



TAKE HOME MESSAGE

- Plaque control- mechanical remains a gold standard for plaque removal
- As plaque is a microscopic entity, use of disclosing agent helps identify and eliminate the plaque thus formed , in clinical scenarios.



SAQs n LAQs

- 1. what is a disclosing agents?
- 2. what is a two tone dye?
- 3. classify disclosing agents?
- 4.uses of disclosing agents?
- 5. mechanism of disclosing agents?

