Periodontology-fourth stage

Second semester-Treatment of halitosis
Lec.18

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The treatment of oral malodor (with an intraoral origin) should preferably be cause related. Because oral malodor is caused by the metabolic degradation of available proteins to malodorous gases by certain oral microorganisms, the following general treatment strategies can be applied:

- **Mechanical reduction of intraoral nutrients (substrates) and microorganisms**
- **Chemical reduction of oral microbial load**
- **Rendering malodorous gases nonvolatile**
- **Masking the malodor**

Mechanical Reduction of Intraoral Nutrients and Microorganisms

- Tooth brushing.
- Interdental cleaning.
- Tongue cleaning using a tongue scraper.
- professional periodontal therapy.
- Chewing gum.



1) Mechanical Reduction of Intraoral Nutrients and Microorganisms

- Because of the extensive accumulation of bacteria on the dorsum of the tongue, tongue cleaning should be emphasized.
- Previous investigations demonstrated that tongue cleaning reduces both the amount of coating (and thus bacterial nutrients) and the number of bacteria and thereby improves oral malodor effective.
- Other reports indicated that the reduction of the microbial load on the tongue after cleaning that the reduced malodor probably results from the reduction of bacterial nutrients

- **Cleaning of the tongue** can be done with a normal toothbrush, but preferably with a tongue scraper if a coating is established

- Tongue cleaning using a tongue scraper reduces halitosis levels by 75% after 1 week.

- It is best to clean as far backward as possible; the posterior portion of the tongue has the most coating.

- The gagging reflex is often elicited, especially when using brushes; practice helps to prevent this.

- ✓ **Tongue cleaning has the additional benefit of improving taste sensation**

- **Interdental cleaning** and **tooth brushing** are essential mechanical means of dental plaque control. Both remove residual food particles and organisms that cause putrefaction.

- Clinical studies have shown that the mechanical action of tooth brushing alone has no appreciable influence on the concentration of VSCs. In a short-term study, showed a short-term effect on bad breath after brushing with a sodium monofluorophosphate toothpaste

- However, the effect was half of what was observed when combined with tongue brushing (73% and 30% reduction in VSCs, respectively)

- When chronic oral malodor arises as a consequence of periodontitis, professional periodontal therapy is needed.

- **Chewing gum** may control bad breath temporarily because it can stimulate salivary flow. The salivary flow itself also has a mechanical cleaning capability.

- Not surprisingly, therefore, subjects with extremely low salivary flow rate have higher VSC ratings and tongue coating scores than those with normal saliva production. showed that chewing gum without any active ingredient can reduce halitosis modestly

Chemical Reduction of Oral Microbial Load

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Together with tooth brushing, mouth rinsing has become a common oral hygiene practice.

Formulations have been modified to carry antimicrobial and oxidizing agents, impacting the process of oral malodor formation.

The active ingredients usually include antimicrobial agents such as chlorhexidine, cetyl-pyridinium chloride (CPC), essential oils, chlorine dioxide, triclosan, amine fluoride and stannous fluoride, hydrogen peroxide, and baking soda.

Some of these agents have only a temporary effect on the total number of microorganisms in the oral cavity.

Question

Does all the mouthwashes work to remove the bad breath ?

According to 'Queen Mary University' in London, mouthwash (containing alcohol) may raise the rate of heart attacks, because it kills the beneficial bacteria that maintain blood pressure.

A recent British study warned that the use of (mouthwash), which is used to sterilize the mouth after brushing and putty raises the risk and the possibility of exposure to major heart problems may sometimes reach seizures and strokes

1- Chlorhexidine

Chlorhexidine is considered the most effective antiplaque and anti-gingivitis agent.

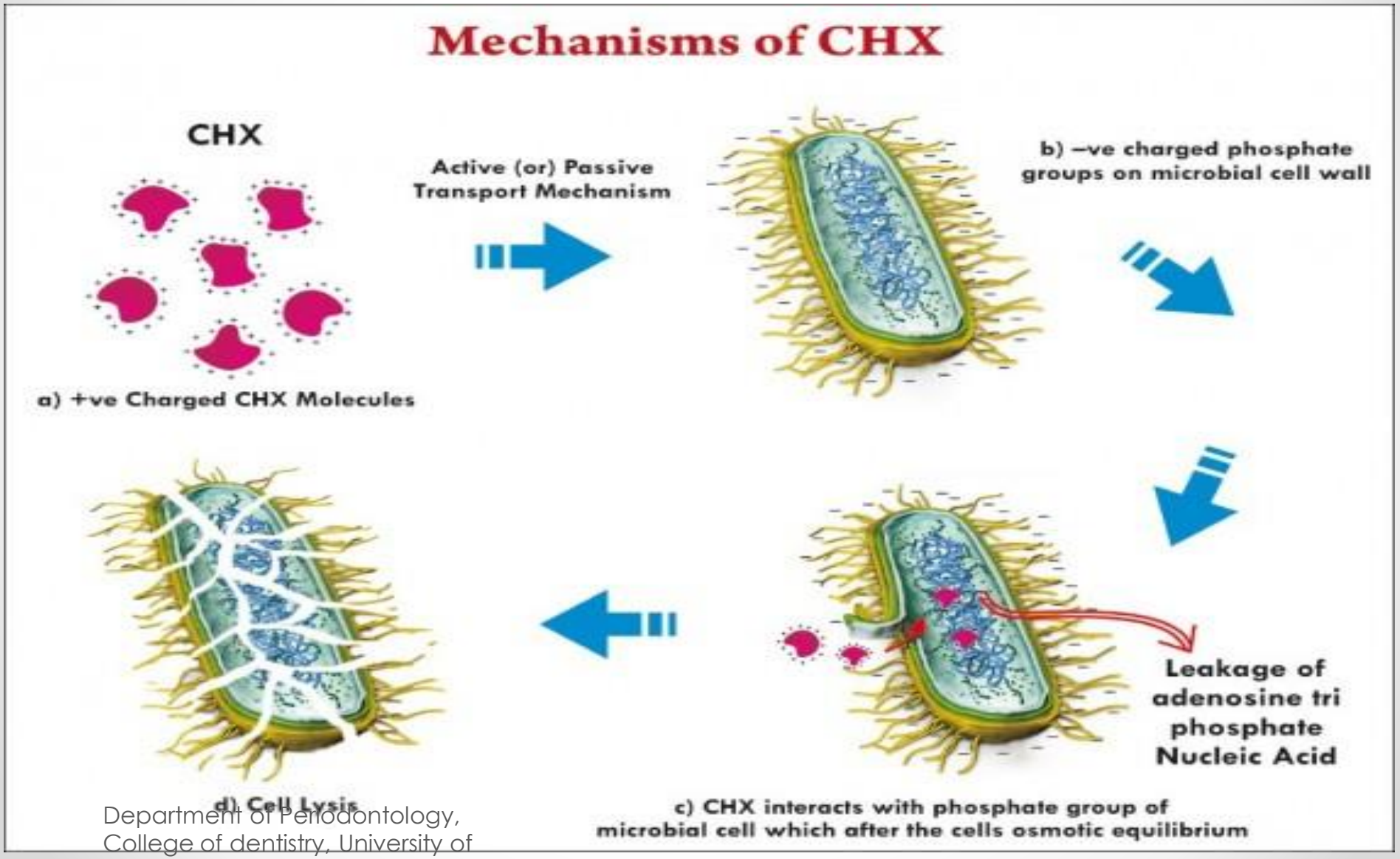
Because of its strong antibacterial effects and superior substantivity in the oral cavity, chlorhexidine rinsing provides significant reductions in VSC levels and organoleptic ratings.

Disadvantage

Unfortunately, as mentioned in some trials, chlorhexidine at a concentration of 0.2% or greater also has some disadvantages

1- increased tooth and tongue staining
2- unpleasant taste
3- some temporary reduction in taste sensation.

Chlorhexidine mechanism of action



2- Essential Oils

Previous studies evaluated the short-term effect (3 hours) of a Listerine rinse (which contains essential oils) compared with a placebo

Listerine was found to be only moderately effective against oral malodor (±25% reduction vs. 10% for placebo of VSCs after 30 minutes) and caused a sustained reduction in the levels of odorigenic bacteria.

Similar VSC reductions were found after rinsing for 4 days.

myth

Mouthwash (Listerine) cause oral cancer !!

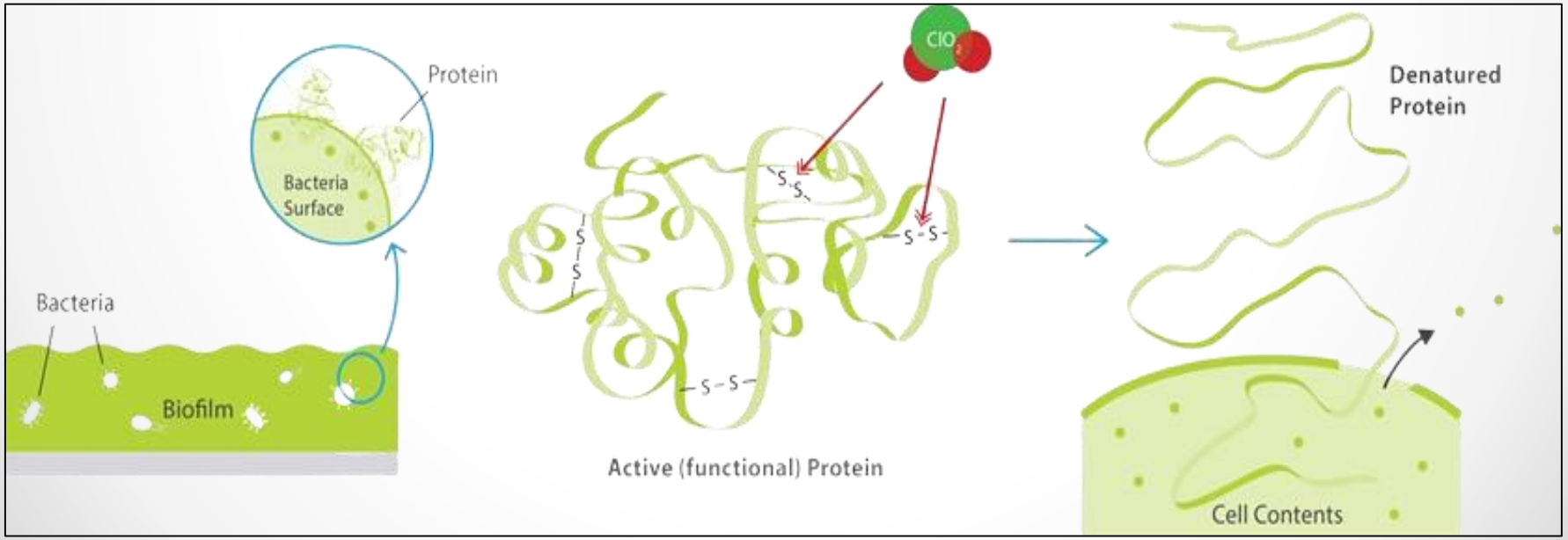
Harvard University has confirmed that there is a link between mouthwash that contains a high amount of alcohol and oral cancer, and surprise that mouthwash (Listerin) does not contain any alcohol, which is recommended by the Saudi Dental Society .

and is named after the world discovered **'Joseph Lester'** cleanses the operating room and was developed in 1914 as a fresh mouthwash used twice daily. In 2012, the lotion won first place as the best oral and dental care lotion.

3- Chlorine Dioxide

Chlorine dioxide (ClO_2) is a powerful oxidizing agent that can eliminate bad breath by oxidation of hydrogen sulfide, methyl-mercaptan, and the amino acids methionine and cysteine.

Studies demonstrated that a single use of a chlorine dioxide–containing oral rinse slightly reduced mouth odor



4- Two-Phase Oil-Water Rinse

- Rosenberg and colleagues designed a two-phase oil-water rinse containing **Cetylpyridinium Chloride (CPC).**

The efficacy of oil-water-CPC formulations is thought to result from the adhesion of a high proportion of oral microorganisms to the oil droplets that is further enhanced by the CPC.

- A twice-daily rinse with this product (before bedtime and in the morning) showed reductions in both VSC levels and organoleptic ratings.

- These reductions were superior to those seen with Listerine and were significantly superior to placebo.

5- Triclosan

Triclosan, a broad-spectrum antibacterial agent, has been found to be effective against most oral bacteria and has good compatibility with other compounds used for oral home care.

❖ **A pilot study demonstrated that an experimental mouth rinse containing 0.15% triclosan and 0.84% zinc (Zn++) produced a stronger and more prolonged reduction in mouth odor than Listerine rinse.**

❖ The anti-VSC effect of triclosan, however, seems strongly dependent on the solubilizing agents.

❖ Flavoring oils or anionic detergents and copolymers are added to increase the oral retention and decrease the rate of release in toothpaste formulations containing triclosan.

Question

Alcohol-based mouthwashes are the best ?

It is a misconception.
Alcohol-containing mouthwash causes dry mouth and therefore bad breath.

It is also irritating to the mucous membranes of the mouth, and in some people causes allergies, so it is best to stay away from alcohol-based consult a dentist to choose the right types as you need

6 - Amine Fluoride or Stannous Fluoride

- The association of **amine fluoride** with **stannous fluoride** resulted in encouraging reductions of morning breath odor, even when oral hygiene was insufficient.

- More recent evidence supporting the use of this rinse has become available.

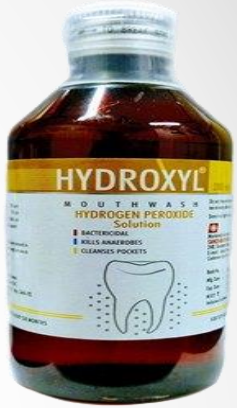
The formulation showed not only short-term but also long-term effects on malodor indicators in patients with obvious malodor.

Stannous fluoride has also been shown to be effective in the management of oral malodor as a component of a dentifrice, reducing both organoleptic scores and VSC levels.

- A superior short-term and overnight benefit of a stannous-containing dentifrice versus a control dentifrice on morning bad breath was demonstrated in a meta-analysis.

7- Hydrogen Peroxide

Suarez and colleagues reported that rinsing with 3% hydrogen peroxide (H_2O_2) produced impressive reductions (±90%) in Sulfur gases that persisted for 8 hours.



8- Oxidizing Lozenges

- Greenstein and associates reported that sucking a lozenge with oxidizing properties reduced tongue dorsum malodor for 3 hours.
- This anti-malodor effect may be caused by the activity of dehydro-ascorbic acid, which is generated by peroxide-mediated oxidation of ascorbate in the lozenges.

9- Baking Soda

Baking soda dentifrices have been shown to confer a significant odor-reducing benefit for up to 3 hours.

The mechanism by which baking soda produces its inhibition of oral malodor is related to its bactericidal effects

Conversion of Volatile Sulfur Compounds

- ✓Metal Salt Solutions
- ✓Tooth paste
- ✓Chewing gum

❖ Metal Salt Solutions

- ✓ Metal ions with an affinity for sulfur are efficient in capturing the sulfur-containing gases.

- ✓ Zinc is an ion with two positive charges (Zn++), which will bind to the twice-negatively loaded sulfur radicals and thus reduce the expression of VSCs.

- ✓ **Zn++ is relatively nontoxic and noncumulative and gives no visible discoloration**. Thus, Zn++ has been one of the most-studied ingredients for the control of oral malodor.

- **Schmidt and Tarbet** reported that a rinse containing zinc chloride was remarkably more effective than a saline rinse (or no treatment) in reducing the levels of both VSCs (±80% reduction) and organoleptic scores (±40% reduction) for 3 hours.

- ✓ In a study by **Hoshi and van Steenberghe**, a zinc citrate/triclosan toothpaste applied to the tongue dorsum appeared to control morning breath malodor for 4 hours

- **De Boever and Loesche** reported that 1 week of rinsing with 0.12% chlorhexidine gluconate, in combination with tooth and tongue brushing, significantly reduced VSC levels, mouth odor, and tongue odor by 73%, 69%, and 78%, respectively.

- Chewing gum can be formulated with antibacterial agents, such as fluoride or chlorhexidine, helping to reduce oral malodor

Masking the Malodor

- ✓Rinses.
- ✓Mouth sprays.
- ✓Lozenges containing volatiles.
- ✓Chewing gum.

Masking the Malodor

- Treatment with rinses, mouth sprays, or lozenges containing volatiles with a pleasant odor has only a short-term effect.