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Study the role of saliva in preventing of dental caries

A Project
Submitted to the college of dentistry. University of Alqadisiyah
In partial fulfilment of the requirement for bachelor"s degree in dentistry

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Supervisor Certification

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Study the role of saliva in preventing of dental caries

Prepared by (**Haider Nazar Kareem,Hawraa Habib Kadhem,Hawraa Mahmoud Thamer,Rafah Abbas Ali**) under my supervision at Al-Qadisiyah University, College of dentistry in partial fulfillment of the requirements for the degree of Bachelor in dental and oral surgery (B.D.S)

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أهداء

اهدي بحث تخرجي ...

الى من كان نجاحها سر دعائي , وحنانها بلسم جراحي , الى اغلى الحبايب امي الحنونة . والى سندي وقوتي وملاذي بعد الله ابي الغالي الذي لم يبخل علي يوما وبه تسعد ايامي . الى كل من علمني حرفا أصبح سنا برقه يضيء الطريق أمامي ... الى اساتذتي الاعزاء كل من .. (د.علي حسن مراد , د.جميلة كاظم العمري , د.غسان ماجد , د.رحيم عبد جبر) والى سندي في شدتي وبهم اقوى على دنيتي اخوتي .

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ABSTRACT

Saliva is a complex secretion. 93% by volume is secreted by the major salivary glands and the remaining 7% by the minor glands. 99% of saliva is water and the other 1% is composed of organic and inorganic molecules. While the quantity of saliva is important, so is its quality. The components of saliva, its functions in maintaining oral health and the main factors that cause alterations in sali-vary secretion will be reviewed, the importance of saliva in caries development and bacterial plaque formation will be discussed and its rôle as an aid to diagnosing certain pathologies will be examined. Variations in salivary flow can be affected, reversibly or irreversibly, by numerous physiological and pathological fac-tors. Saliva plays an essential rôle in maintaining the integrity of the oral structures, in personal relationships, in the digestion and in controlling oral infection. The part that saliva plays in protecting teeth from caries can be summarised under four aspects: diluting and eliminating sugars and other substances, buffer capacity, balancing demineralisation /remineralisation and antimicrobial action.

Background. The multiple functions of saliva play a significant role in the prevention of dental caries.

Methods. Chewing gum is known to stimulate sali-vary flow, and the results of studies of the role of stimu- lated saliva in the oral clearance of food particles, neutralization of dental plaque acids and reduction of the incidence of dental caries have been reported.

Conclusions. Stimulating salivary flow through the chewing of sugar-free gum after meals has been shown to reduce the incidence of dental caries.

Clinical Implications. Practical measures for stimulating salivary flow after meals or snacks should be considered in caries prevention programs.

Key words: Saliva, hypersalivation, hyposalivation, caries, bacterial plaque, diagnosis.
Key Words. Caries; caries prevention products; chewing gum; saliva;salivary flow.
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Content

Introduction

Saliva plays a significant role in maintaining oral health, helping to build and maintain the health of soft and hard tissues. When saliva flow is reduced, oral health problems such as dental caries and oral infections can develop.
Saliva is the complex mixture of fluids that surrounds the oral tissues, and it originates from major and minor salivary glands and nonglandular sources such as crevicular fluids, oral microorganisms and host cells. The consistency of saliva can be watery, thick, sticky or frothy depending on its composition; the amount of proteins in saliva mainly will determine its thickness or frothiness. A basal unstimulated secretion is produced continuously to moisturize and lubricate the oral tissues for more than 90 percent of the day.The normal resting salivary flow rate ranges from 0.25 to 0.35 milliliter per minute. Mechanical, gustatory, olfactory or pharmacological stimuli increase the production and secretion of saliva. Stimulated saliva represents 80 to 90 percent of daily salivary production, and the stimulated flow rate varies from 1 to 3 mL/minute. The salivary pH and the salivary buffering capacity are determined by the hydrogen bicarbonate balance in saliva. Salivary pH is approximately neutral, and buffering agents, such as inorganic phosphate in resting saliva and carbonic acid-bicarbonate system in stimulated saliva, help maintain neutrality .

Among the various protective functions of saliva, including diluting and cleaning the oral cavity, serving as a host defense, and buffering and enabling ion exchange, certain salivary characteristics outside the normal range of values may contribute to the caries process. Dental caries results from the dissolution of minerals from the tooth surface by organic acids formed from the bacterial fermentation of sugars. The capacity of saliva to flush microorganisms and substrates and maintain oral cleanliness may be influenced by its consistency and flow rate. Salivary pH and buffering capacity can contribute to the ion exchanges during re-mineralization and demineralization of enamel, with supersaturation of calcium and phosphate at pH 7 and in the presence of fluoride.[7] The concentration of hydrogen ions (pH) at the tooth surface also will affect the rate of demineralization. The statements above are based primarily on the results of in vitro studies that reveal the biological plausibility for changes in salivary characteristics to contribute to the development of dental caries.

Another source of evidence of the influence of saliva on dental caries is studies conducted in people who have chronic salivary disturbances.

Sjögren syndrome, an autoimmune disease, is characterized by a dramatically decreased salivary flow rate, and patients with this syndrome have higher rates of caries experience than those in control participants.

The long-term use of some medications with antisialogogue effects, such as β-adrenergic agonists,corticosteroids and psychotropics,also has been shown to be associated with a high rate of caries experience.

However, the effect of saliva on dental caries in people without pathological conditions or chronic salivary gland hypofunction is less well under-stood. Evidence from epidemiological studies is scarce, and most studies lack statistical power. In a general population in which salivary function typically is within the normal range, the early identification of patients who may develop dental caries may contribute to the use of less invasive treatments. We hypothesize that a low salivary flow rate, low pH and low buffering capacity are associated with a higher dental caries rate.

Therefore, our objective in this study was to investigate the association between salivary characteristics and dental caries within the previous 24 months in a sample of patients in general dental practices.

Can saliva cure tooth decay?

Saliva is a powerful natural defence against tooth decay. It can wash sugar out of your mouth into the stomach, stop the damaging effect of acid made by bacteria, fight bacteria and reverse the early stages of tooth decay by repairing tooth mineral.

Saliva helps prevent cavities from forming, and aids in protecting against gum disease. It naturally cleans teeth by washing away bits of food debris and preventing a prolonged acid attack on tooth enamel. Saliva also contains antimicrobial agents that help combat bad bacteria that fuels cavities .

Chapter one

1-1 Salivary Glands and Saliva

Saliva is produced in and secreted from salivary glands. The basic secretory units of salivary glands are clusters of cells called an acini. These cells secrete a fluid that contains water, electrolytes, mucus and enzymes, all of which flow out of the acinus into collecting ducts.

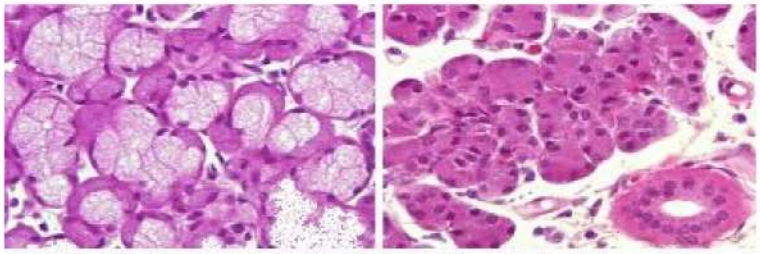
Within the ducts, the composition of the secretion is altered. Much of the sodium is actively reabsorbed, potassium is secreted, and large quantities of bicarbonate ion are secreted. Bicarbonate secretion is of tremendous importance to ruminants because it, along with phosphate, provides a critical buffer that neutralizes the massive quantities of acid produced in the forestomachs. Small collecting ducts within salivary glands lead into larger ducts, eventually forming a single large duct that empties into the oral cavity.Most animals have three major pairs of salivary glands that differ in the type of secretion they produce:

- *parotid glands* produce a serous, watery secretion
- *submaxillary (mandibular) glands* produce a mixed serous and mucous secretion
- *sublingual glands* secrete a saliva that is predominantly mucous in character

The basis for different glands secreting saliva of differing composition can be seen by examining salivary glands histologically. Two basic types of acinar epithelial cells exist:

- *serous cells*, which secrete a watery fluid, essentially devoid of mucus
- *mucous cells*, which produce a very mucus-rich secretion

Acini in the parotid glands are almost exclusively of the serous type, while those in the sublingual glands are predominantly mucus cells. In the submaxillary glands, it is common to observe acini composed of both serous and mucus epithelial cells.



Mandibular gland (mixed) Parotid gland (serous)

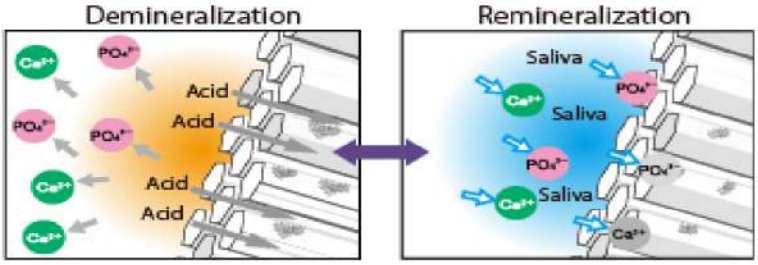
2-1 Saliva, Remineralization And Dental Caries

Along with preventive therapies, optimal salivary action can promote remineralization and reverse lesion development in patients with dental caries.

The development of dental caries is a dynamic, multifactorial process. The constant cycle of tooth demineralization/remineralization can be positively or negatively impacted by a variety of oral and systemic factors. Assessing caries risk status and identifying appropriate remineralization therapies for high-risk individuals are key steps in improving patients' oral health.

Considered a critical biological and protective factor in the remineralization of enamel, saliva is an important component in caries risk assessment and when selecting remineralization therapies. Saliva's buffering capacity and production are directly related to the rate and extent of tooth demineralization. Saliva can neutralize acids, form a protective membrane on tooth surfaces, and enhance remineralization by providing calcium, phosphate and fluoride to enamel and dentin. Salivary pH levels directly affect remineralization through the amount of calcium and phosphate ions available to the enamel in times of acidic challenge.

Saliva can act as a replenishing source and inhibit tooth demineralization during periods of low pH, while promoting tooth remineralization when the pH returns to a neutral state. Systemic conditions, hereditary disorders, a variety of medications, and other medical interventions can negatively affect salivary production, buffering potential, and the amount of calcium and phosphate available for remineralization. As such, evaluating a patient's salivary flow should be a regular component of caries risk assessment.



Demineralization is the process of removing mineral ions from hydroxyapatite crystals of hard tissues, such as enamel, and, when unchecked, can lead to dental caries. Demineralization/remineralization is a continuous, cyclical process, and the former takes place on the tooth surface when biofilm — consisting of bacterial plaque and the pellicle — is present on enamel and dentin. When fermentable carbohydrates are ingested, *Lactobacillus* and *Streptococcus* bacteria in the biofilm metabolize the carbohydrates and produce acid.[7] This acid diffuses across the tooth surfaces, dissolving minerals in the enamel and dentin. Although demineralization results in the loss of mineral ions, it can be reversed during remineralization. Both processes occur on the tooth surface, however, a considerable number of mineral ions must be lost from hydroxyapatite before cavitation occurs. The extent of demineralization and remineralization depends on several factors, including the amount of calcium and phosphate available, as well as salivary pH levels. Individuals with reduced salivary flow tend to have more acidic saliva and biofilm, raising the risk for continued demineralization and eventual lesion development.

Patients with reduced salivary flow and/or compromised buffering potential need assistance with the remineralization cycle.

While it is important to prevent early lesions, identifying dental caries in the early stages of the demineralization process — while the condition is still reversible — is critical. Oral health professionals can intervene with preventive remineralization therapies before the process becomes irreversible. The International Caries Detection and

Assessment System (ICDAS) is a tool used to visually assess the development of early caries lesions on coronal, smooth and root surfaces (Table 1 and Table 2).

TABLE 1. International Caries Detection and Assessment System Lesion Identification

Code	Lesion Appearance on Individual Coronal and Smooth Surfaces
0	No lesion
1	Visual change evident when dry (white spot)
2	Visual change seen when wet
3	Localized enamel breakdown not involving dentin
4	Localized enamel breakdown involving dentin (shadowing present)
5	Cavitation and dentin present
6	Obvious extensive caries

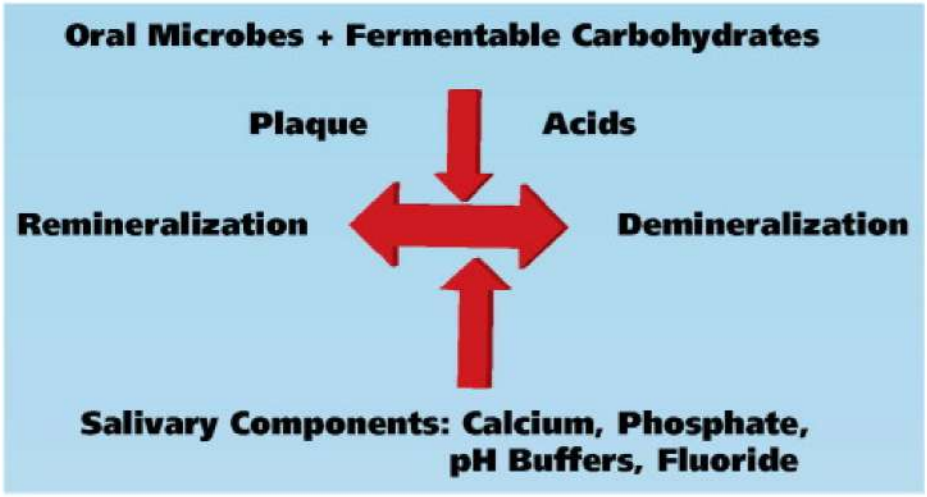
TABLE 2. International Caries Detection and Assessment System Root Lesion Identification

Code	Lesion Appearance on Individual Root Surfaces
E	Root surface not visible
0	No discoloration or defect visible
1	Obvious discoloration, but no cavitation
2	Obvious discoloration and cavitation

3-1 Composition and production : -

Saliva is an exocrine solution consisting of 99% water. The remaining 1% consists of a variety of electrolytes and proteins. These components combined are responsible for the various functions attributed to saliva.Saliva is formed primarily (approximately 90%) from the secretions of the three paired major salivary glands, the submandibular (around 65%), parotid (around 20%) and sublingual (around 5-7%).

These glands are controlled by the autonomic nervous system, while minor glands (labial, lingual, buccal and palatine), distributed around the oral cavity, produce the remaining saliva (<10%). At rest, without exogenous or pharmacological stimulation, there is a small, continuous salivary flow, an unstimulated secretion, present in the form of a film that covers, moisturises, and lubricates the oral tissues. This flow of saliva at rest is in the region of 0.4–0.5mL/minute in healthy subjects.



Stimulated saliva is produced in response to a mechanical, gustatory, olfactory, or pharmacological stimulus, contributing to around 40-50% of daily salivary production. The Salivary Flow (SF) index is a parameter allowing stimulated and unstimulated saliva flow to be classified as normal, low or very low (hyposalivation). In adults, normal total stimulated SF ranges 1–3 mL/minute, low ranges 0.7–1.0 mL/minute, while hyposalivation is characterised by a stimulated SF <0.7mL/minute.

4-1 The functions of saliva :

The two major functions of saliva are:

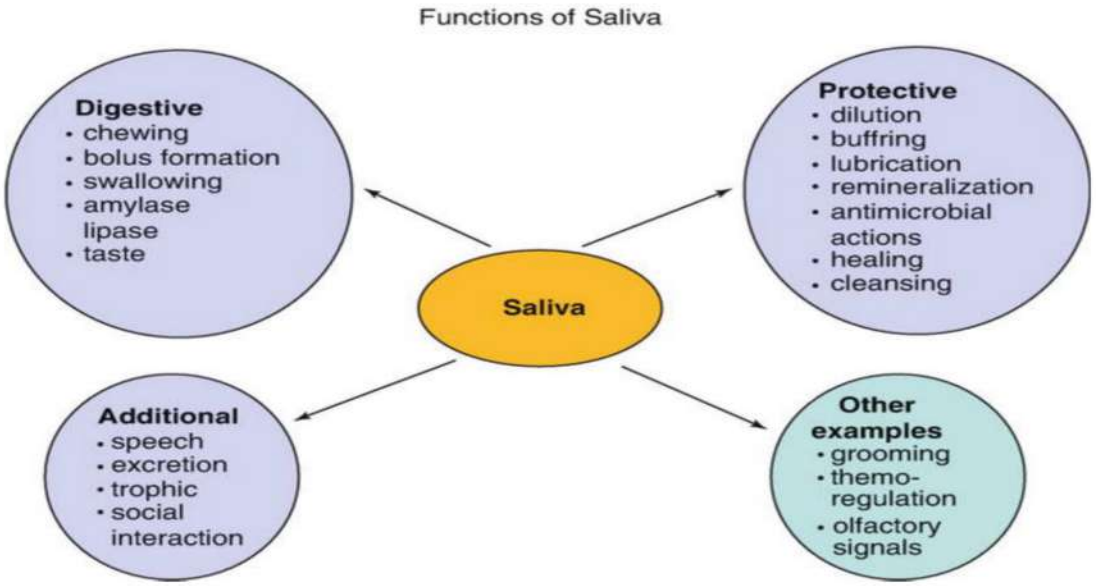
1. Protection of the oral and peri-oral tissues
    - Lubrication
    - Dilution of sugars after food and drink intake
    - Antimicrobial and cleansing activity, degrading some bacterial cell walls and inhibiting growth
    - Buffering (neutralising) acid production and controlling plaque pH with bicarbonate
    - Remineralisation of enamel with calcium and phosphates
    - Tissue repair

2. Facilitating eating and speech

    - Food preparation, enhancing chewing, the clearing of food residues and swallowing
    - Digestion, food breakdown with enzymes
    - Enhancing taste
    - Enabling speech by lubricating the moving oral tissues

In addition, saliva is used in diagnostic testing

- Bacterial, yeast, and viral counts indicating caries activity and altered immune responses, as well as many diagnostic tests for oral and systemic diseases
- Hormonal balance to identify steroids and sex hormones

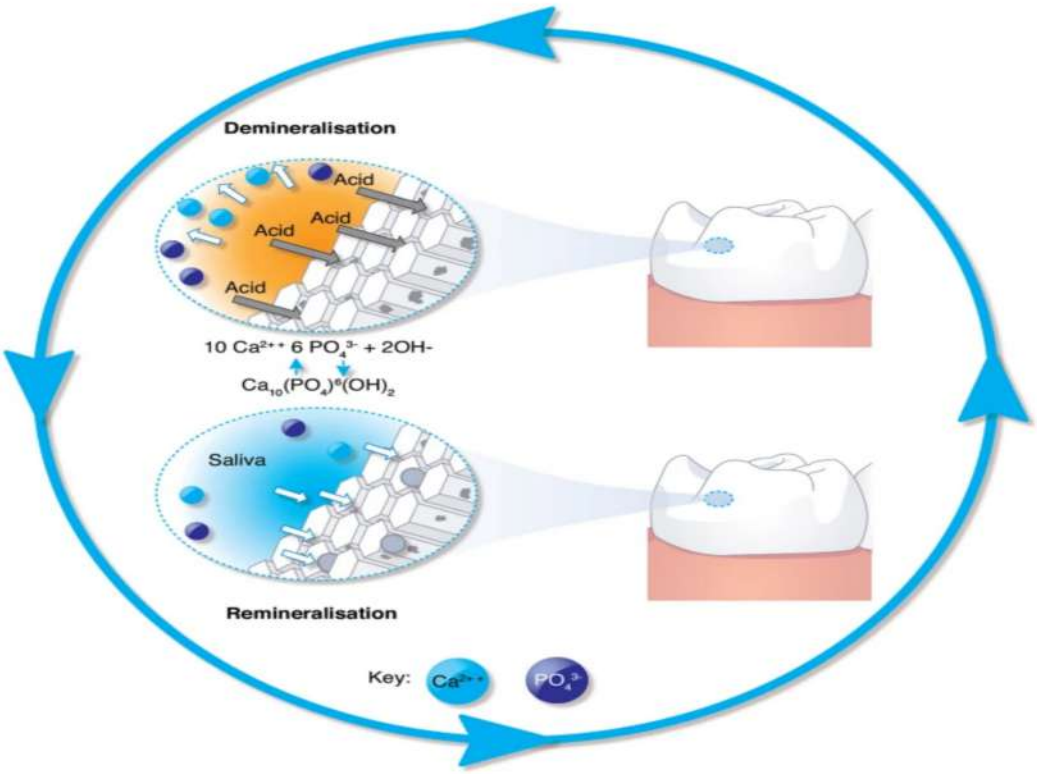


Chapter two

1-2 Saliva and dental caries :-

In addition to moderating microbial factors and encouraging preventive dietary behaviours, a core goal in caries prevention is promoting the natural protective mechanisms of saliva.

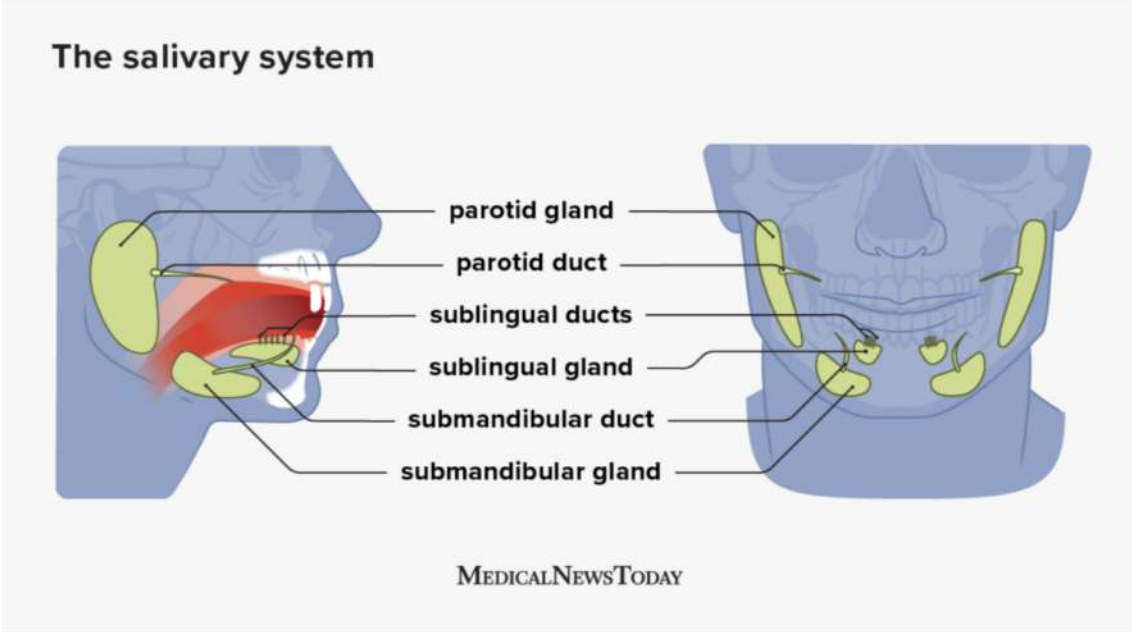
The pH of dental plaque is a key factor in the balance between acid demineralisation of the teeth and the remineralisation of the initial caries lesion. Plaque pH falls each time acid accumulates in the plaque due to bacterial acid production following the consumption of fermentable carbohydrates – mainly sugars – in foods and drinks. Conversely, plaque pH rises when the acids are washed away or neutralised by saliva, which contains the important buffer, bicarbonate. In healthy teeth, the loss of minerals is balanced by the reparative mechanisms of saliva. This equilibrium can be depicted chemically by the equation overleaf.



When the saliva pH or the plaque pH is below a 'critical value' of about 5.5, the saliva or plaque becomes unsaturated with respect to tooth mineral. As a result, tooth enamel can begin to dissolve. However, when the pH is above this value, the saliva and plaque are supersaturated with respect to tooth mineral. The calcium and phosphate ions in saliva then start to repair any damaged mineral crystals in the enamel – the process of remineralisation.Thus, acidic conditions contribute to bringing phosphate and hydroxyl ions below saturation levels, allowing the solid hydroxyapatite crystals of the tooth mineral to dissolve. If above saturation levels, the chemical reaction will move towards remineralisation and any damaged crystals will be repaired by the acquisition of ions from the solution.Stimulation of saliva flow results in an increase in the washing out of acids (and sugars), and also an increase in the amount and concentration of bicarbonate buffer and of remineralising ions.

2-2 Salivary gland disorders :-

The importance of the salivary glands – and saliva – tends to go unnoticed until the glands malfunction. The consequences are severe and impact greatly on quality of life.



Symptoms may start with a constant thirst, difficulty in speaking, eating, tasting and swallowing foods and progress to tooth decay and oral infections. The most common salivary gland disorder is xerostomia, which is the subjective feeling of dryness throughout the mouth.

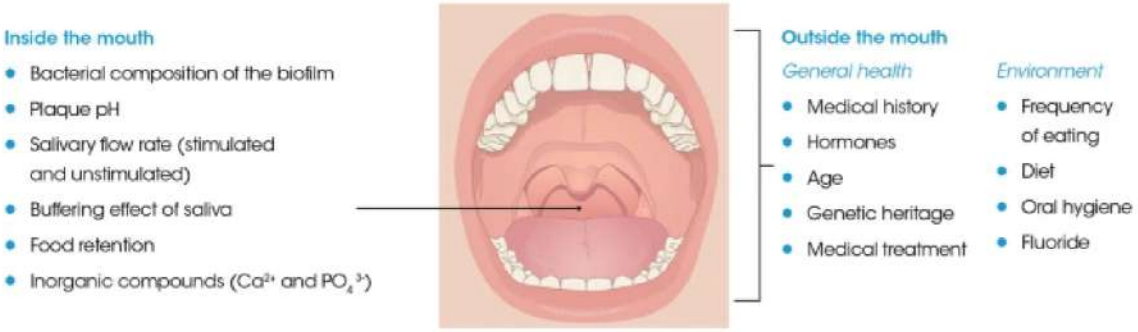
Clinical studies have shown that chewing sugar-free gum stimulates the salivary glands to produce a strong flow of saliva (a 10-12 fold increase over unstimulated saliva). The effect of stimulation is to increase the concentration of bicarbonate in the saliva entering the mouth. This bicarbonate raises the pH of the saliva and greatly increases its buffering power: the saliva is, therefore, much more effective in neutralising and buffering food acids and acids arising in plaque from the fermentation of carbohydrate.

3-2 Xerostomia :-

Studies conducted on outpatients and in the general population show that xerostomia affects about 1 in 4 people. Salivary flow rate patterns demonstrate both daily and seasonal variation, with peaks in mid-afternoon and higher flow rates in the winter than in the summer. During sleep, saliva flow rate is minimal. People who complain of dry mouth do not necessarily have a very low flow rate; conversely, those with a low unstimulated flow rate do not always complain of dry mouth. It is therefore of greater significance to establish Whether or not the flow rate has changed adversely in a particular individual.

Reduced salivary flow is due to hypofunction of the salivary glands. This may be reversible, due to anxiety, acute infection, dehydration or the effects of some drugs. There are also some permanent causes of xerostomia such as congenital abnormalities, Sjögren's syndrome, HIV/AIDS and the result of head and neck irradiation. However, xerostomia is most commonly associated with the use of xerogenic drugs. More than 400 medicines induce salivary gland hypofunction, including tricyclic antidepressants, antihistamines, certain antihypertensives and drugs with sympathomimetic actions (e.g. some bronchodilators). In the past, it was commonly believed that dry mouth and declining salivary function were purely a natural consequence of aging.

While it is true that salivary gland dysfunctions are more prevalent in older populations, studies suggest that salivary gland dysfunction is due to a combination of ageing per se and the higher incidence of chronic illnesses and the greater use of drugs by the ageing population – both of which can impact the production of saliva.



Chapter three

1-3 HYPOSALIVATION :

Hyposalivation and/or xerostomia is a decrease in salivary flow and is characterized by oral dryness. It can be caused by medications, autoimmune diseases (such as Sjögren's syndrome), radiotherapy/chemotherapy and hormone disorders. Approximately 30% of patients between the ages of 20 and 69 have xerostomia, and medications are the most common cause. As life expectancy grows, the prevalence of xerostomia increases due to the number of medications prescribed for various health conditions. A review by Smith and Burtner revealed xerostomia was the most common side effect (80.5%) of 200 of the most frequently prescribed medications in the United States. Patients who experience diminished salivary production are at an increased risk for oral diseases, such as dental caries and/or mucosal infections.The protective qualities of saliva depend on volume. These protective qualities can be significantly enhanced or reduced, depending on the rate of secretion in unstimulated and stimulated conditions. Unstimulated, normal salivary secretion is > 0.3 ml/minute, with ranges from 0.5 liter per day to 1.5 liters per day, compared with ranges of 0.1 ml/minute to 0.7 ml/minute in patients with reduced salivary production.

Decreased salivary flow creates an oral environment that inadequately neutralizes acids, increasing the intraoral pH for long periods. Any decrease in salivary volume should be monitored, as it can significantly shift the balance in caries risk. Additionally, other risk factors — such as frequent consumption of acidic drinks and/or high-sugar diet — can accelerate demineralization in an already compromised environment.

Figure 1: Patient with hyposalivation, dry mucosa and chronic ulceration on lateral border of the tongue.

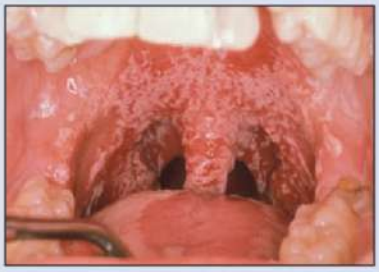


Figure 2: Candidiasis in patient taking antidepressant medications that cause dry mouth. Oral findings include pseudomembranous candidiasis with white adherent patches on the palate and erythematous candidiasis presenting with erythema and depapillation on the mid-dorsum of the tongue.

Figure 3: Extensive demineralization and cavitation of teeth in a patient with hyposalivation.

2-3 ASSESSING SALIVARY FLOW

Assessment of salivary gland function should be included in routine dental visits, as it is essential in diagnosing salivary gland hypofunction as the cause of xerostomia. Clinicians generally use a subjective approach to identify and assess dry mouth, such as a patient's response to a health questionnaire or medical history form. However, an objective measurement of qualitative or quantitative changes in saliva is ideal and best captured by collecting whole saliva or saliva from individual glands.Saliva is produced and secreted from the major and minor salivary glands. The major salivary glands are the parotid, submandibular and sublingual.

Oral moisture level (OM level)

Stimulated whole saliva volume
(S-WSV)

Unstimulated whole saliva volume/spitting
(U-WSV)/spitting

Unstimulated whole saliva volume
(U-WSV)

Individual major salivary gland saliva samples can be captured with a modified Carlson-Crittenden device for the parotid gland, and a modified Wolff saliva collector for the submandibular and sublingual glands. Whole saliva can be collected in either an unstimulated or stimulated method. Both are collected with a tube and funnel. Methods used to stimulate whole saliva flow include gum base, paraffin wax, rubber bands and citric acid. The ability to assess salivary flow rate chairside enables clinicians to identify patients experiencing salivary gland hypofunction and develop personalized treatment options to support the remineralization process .

3-3 ANALYZING SALIVA SAMPLES

Once saliva samples have been collected, chairside and laboratory tests are available for analysis. These tools can be used to evaluate salivary pH, as well as saliva buffering capacity.Research by Singh et al evaluated the use of the Saliva-Check Buffer kit, Systronics electrode pH meter, Saliva-Check Mutans kit, and a semi-autoanalyser in identifying caries risk in children. Compared to subjects with active caries lesions, the results indicated the mean values for pH level, buffering capacity, and calcium and phosphorous ions were higher in children without caries.Anand et al measured pH values and buffering capacity of saliva using a handheld pH meter after hydrochloric acid titration. The results revealed a significant relationship between pH levels and dental caries experience. These studies show chairside and/or laboratory saliva testing can be included in routine dental examinations as a noninvasive method to help predict caries risk.

4-3 TREATMENT OPTIONS

Saliva substitutes and stimulants used for salivary gland hypofunction are available in sprays, gels, oils, mouthrinses and chewing gums, and each option differs with respect to the base substance, chemical composition and viscosity — not to mention patient preference. Other treatment options directly impact the remineralization process. There is conflicting research as to whether one therapy is better than another. Oral health professionals should be knowledgeable about the differences in these options so a customized treatment plan can be created to reduce caries risk and promote remineralization.

Certain salivary substitutes have reportedly increased demineralization by significantly decreasing intraoral pH. Aykut-Yetkiner et al[11] found that four saliva substitutes increased demineralization due to low pH or the presence of citric acid found in the substitute. However, several saliva substitutes were found to significantly increase remineralization due to the high-viscous consistency of the products, leading to mechanical protection of the tooth surface. Patients with xerostomia may wish to use high-viscous saliva substitutes and avoid saliva substitutes with low pH or citric acid.[11]In combination with at-home fluoride products, the use of professionally applied fluoride may enhance remineralization. Poor salivary contact and limited accessibility to interproximal surfaces make it difficult to manage incipient caries lesions. Songsiripradubboon et al investigated the remineralization properties of fluoride mouthrinses (used at different times in conjunction with fluoride toothpaste) on incipient lesions. Results showed that twice-daily use of 0.05% sodium fluoride mouthrinse, combined with twice-daily use of fluoride toothpaste, facilitated the greatest remineralization of incipient caries.

The remineralization process in patients with reduced salivary production is often hindered, and the use of fluoride can be limited by the lack of calcium and phosphate ions present. Fluoride, calcium and phosphate are needed to aid in the remineralization process during a cariogenic attack. Amorphous calcium phosphate (ACP), a combination of soluble salts of calcium and phosphorous, may help to remineralize tooth structure. Peric et al evaluated the effect of casein phosphopeptide-ACP (CPP-ACP) and casein phosphopeptide-amorphous calcium fluoride phosphate (CPP-ACFP) pastes in patients with Sjögren’s syndrome.

The results indicated that patients who used these pastes experienced a slight increase in salivary pH values, a significant rise in plaque pH values, and partial or complete occlusion of enamel defects. Evidence suggests that pastes containing CPP-ACP/CPP-ACFP enhance remineralization in patients with Sjögren's syndrome. Mendes et al evaluated the effect of paste containing CPP-ACP and paste containing CPP-ACP combined with fluoride in the remineralization of white-spot lesions. The results showed the highest rates of remineralization occurred with the use of CPP-ACP combined fluoride paste. This clinical trial suggests CPP-ACP pastes containing fluoride may increase the efficacy of CPP-ACP in the remineralization process.

Other options used to support remineralization include calcium sodium phosphosilicate and tri-calcium phosphate. Calcium sodium phosphosilicate is composed of calcium, sodium, phosphorus and silica, and is designed to release calcium and phosphate, enhancing remineralization. Used in collaboration with fluoride, tri-calcium phosphate may support remineralization better than fluoride alone.

Conclusion

saliva does in fact have a protective effect on teeth. When exposed to highly acidic drinks such as Coca-Cola, the saliva was able to prevent a great amount of pitting and decalcification from occurring. The importance of salivary protection in preventing tooth decay cannot be overemphasized. From a clinical standpoint this is a very critical observation, for when saliva production is reduced due to xerostomia (dry mouth) or even daily variations of salivary flow, teeth are left unprotected and can start decaying at a much faster rate than if saliva were present. The advice clinicians can give to patients, especially teenagers, is to completely avoid acidic drinks, especially at night-time when there is a drastic reduction in the salivary flow. This also applies to medication-induced xerostomia, in an already aging population where the rate of caries is rapidly increasing. When there is a great amount of tooth decay as a result of little saliva, patients experience pain and suffering, inability to chew properly, and an increase in health costs. The best advice to give to patients is to refrain from consuming ACBs on a regular basis because they can cause great harm and damage to their dentition.

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دور اللعاب في منع تسوس الأسنان

مشروع تخرج مقدم الى كلية طب الاسنان كجزء من متطلبات نيل شهادة البكالوريوس في طب وجراحة الفم والاسنان

من قبل

حيـــدر نـــزار كـــريم

حـــوراء حبـيـب كـــاظم

حـــوراء محـمـود ثـــامـر

رفـــاه عـــــباس عـــلـي

المشرف

أ.م .د جميلة كاظم عبد الحسن العمري

الملخص

اللعاب هو إفراز معقد. 93٪ من حيث الحجم تفرزها الغدد اللعابية الكبرى والباقي 7٪ تفرزها الغدد الصغرى. 99٪ من اللعاب عبارة عن ماء و 1٪ أخرى تتكون من جزيئات عضوية وغير عضوية. في حين أن كمية اللعاب مهمة ، كذلك نوعية اللعاب. ستتم مراجعة مكونات اللعاب ووظائفه في الحفاظ على صحة الفم والعوامل الرئيسية التي تسبب تغيرات في إفراز اللعاب ، وستتم مناقشة أهمية اللعاب في تطور تسوس الأسنان وتكوين اللويحة البكتيرية ودورها كوسيلة مساعدة لتشخيص بعض سيتم فحص الأمراض. يمكن أن تتأثر الاختلافات في تدفق اللعاب ، بشكل عكسي أو لا رجوع فيه ، بالعديد من العوامل الفسيولوجية والمرضية. يلعب اللعاب دورًا أساسيًا في الحفاظ على سلامة تراكيب الفم والعلاقات الشخصية والهضم والسيطرة على عدوى الفم. يمكن تلخيص الجزء الذي يلعبه اللعاب في حماية الأسنان من التسوس في أربعة جوانب: التخفيف والقضاء على السكريات والمواد الأخرى ، سعة التخزين ، موازنة إزالة المعادن / إعادة التمعدن والعمل المضاد للميكروبات. يساعد اللعاب على منع تكون التجاويف ويساعد في الحماية من أمراض اللثة. ينظف الأسنان بشكل طبيعي عن طريق غسل أجزاء من بقايا الطعام ومنع هجوم الحمض لفترات طويلة على مينا الأسنان. يحتوي اللعاب أيضًا على عوامل مضادة للميكروبات تساعد في مكافحة البكتيريا السيئة التي تغذي التجاويف.