IRAQI Academic Scientific Journals
العراقية المجلات الاكاديمية العلمية
ISSN:1813-1646
Tikrit Journal for Agricultural Sciences
Journal Homepage: http://tujas.tu.edu.iq
TJAS
Tikrit Journal for Agricultural Sciences

Effect of Some Teeth Cleaning Methods on the Microbiological Content of the Oral Cavity

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KEY WORDS:

oral cavity, daily practices, Bacteria isolation, VITEK

ARTICLE HISTORY:

Received: 12/11/2018

Accepted: 09/12/2018

Available online: 01/04/2019

ABSTRACT

The study was conducted in the period from January to May 2018. The study included the identification of the total account and types of microbial content of the oral cavity during the normal daily practices at different times, which were after waking up, after washing mouth with water (rinsing), after breakfast and after using toothpaste for 33 donors of females and males, smokers and non-smokers, and the ages range were 25-35 years. The results of the study showed that all donor groups showed positive growth during the isolation stages, but there were no significant differences in the growth density of the total count, Enterobacteriaceae and staphylococcus for the donor groups, and the recorded account are not considered to be dangerous to the health of mouth. This is because donor's mouth health was good and smoking period was short. The highest account of bacteria in isolates were seen among smokers after waking up was 74-550 cfu / ml. The study also included the diagnosis of isolated microbial species using VITEK2. The results showed that the isolated bacterial species are *Staphylococcus aureus, Lelliottia amnigena*, *Pseudomonas fluorescens*, *Pseudomonas luteola*, *Klebsiella pneumonie*, *Stenotrophomonas maltophilia* which were varied in count, Bacterial resistance was tested for some of the antibiotics that were Doxycycline (DO), Mastiscs (TS), Ceftriaxone (CRO), Tobramycine (TOB), Mastiscs (T), Mastdiscs (T), Gentamicin (CN). The results showed that *L. amnigena* and *S.maltophilia* were sensitive to all antibiotics. *P. fluorescens* were sensitive to antibiotics CN, T, TOB, DO and resistance to antibiotics CRO, TS whereas *K.pneumonie* was sensitive to all Antibiotics used except the DO antibiotic. The *S.aureus* bacteria showed resistance to antibiotics CN, TOB, CRO, TS and sensitive to antibiotics T, DO.

INTRODUCTION

Oral health is often a reflection of an individual's health, so it is important to keep your mouth clean and healthy (Karibasappa and Hansen,2011) , The nature of the composition of oral tissues make it the source for various types of microorganisms, especially bacteria, which are the main source of diseases of the mouth and gums (Colombo *et al*, 2013) . The presence of a number of negative and positive bacteria for Gram Stain had been recorded in the mouth and the presence of many of them had been classified as normal even for the pathogenic types (Brook et al,2000: Bueris et al,2005) . Maintaining oral hygiene contributes significantly to reducing microbial content in the mouth and thus controlling diseases that can infect the mouth (Karibasappa and Hansen,2011) . Bacteria are responsible for bad breath, tooth decay and gum disease (Kazor *et al*,2003).

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One of the most common bacterial strains that can infect the mouth because of poor hygiene and lack of oral care is due to different kinds of species Staphylococcus spp , Pseudomonas spp , Enterobactar spp These bacterial strains can cause many diseases such as gingivitis, pharyngitis, mouth sinusitis, tooth decay, foul mouth odor (Wetzel *et al*, 2005). It was also found that the types of those microbes in the mouth are associated with multiple diseases that can affect people such as cardiovascular disease and osteoporosis (Wu *et al*, 2000). The pathogenic effect of bacterial species may not be present despite their presence in the mouth. However, its pathogenic effect may be manifested in the weakness of the body's immunity or when these bacteria reach's the blood stream of the carriers(Loberto *et al*, 2004). *Pseudomonas maltophilia* and *Staphylococcus aureus* were isolated from people who were classified as healthy and did not suffer from periodontitis, tooth decay and other problems (Colombo *et al.* 2013). The high content of the bacteria in the mouth makes it a source of the spread of these bacteria in other organs of the body (Lima *et al*, 2015), As well as to the environment surrounding them and other people through saliva, which also can be transmitted through specking, coughing, sneezing or breathing (Leao- Vasconcel *et al*. 2015).

The daily eating habits of people greatly affects the increase or decrease of microbial content of the mouth cavity (Hady *et al*, 2012), Contaminated water and food is one of the main sources of oral contamination in microorganisms (Saini and Santosh, 2010) ,Isolates of Klebsiella spp. and Pseudomonus spp. were isolated from drinking water in Salaheddin province (AL-nazal *et al*, 2009). *Lelliottia amniogena*and species of Pseudomonas spp. and *Staphylococcus aureas* were isolated from food (Franzetti and Scanpellini, 2007; Abid Ali *et al*, 2013; Liu *et al*, 2016).

The individual daily habits of people have an important role in increasing or decreasing the microbial content of the oral cavity (Zawadzki *et al*, 2016). One of the most common habit is the use of toothpaste to maintain the aesthetic appearance of teeth and oral health (Nwakanma *et al*, 2014), Experiments have shown that the content of fluoride toothpaste has an important role in inhibiting microscopic microbiology and therefore daily use has a significant role in maintaining oral health and preventing dental caries (Baeshen *et al*. 2011 ; AL-Dabbagh *et al*, 2016), Nwakanma *et al,*(2014) found a role for toothpastes in inhibition of some Staphylococcus bacteria.

Smoking is one of the most common habits that lead to damage to the organs of the human body, especially the mouth, which leads to damages in the tissue of the mouth, which stimulates the growth of microbes, as it is the first responsible for inflammation of the gums, change of the color, bad breath and it could cause cancer of the mouth or any organ of the body (Ozturk *et al*, 2017) . Smoking may cause a decrease in the immunity of the oral cavity to the resistance of microbes and thus microbes increase. Smoking may not be a direct cause of the rise in microbial content, but it is due to the weakness of the oral tissues and the lack of immunity of smokers, causing the increase of microbial content of smokers, especially in greedily smoking and for long periods (Ogba *et al*, 2017).

The aim of this research was to identify the microbial content of the oral cavity and the effect of some daily habits related to dates and times of use of the toothpaste in the microbiological content of oral cavities for smokers and non-smokers.

MATERIALS AND METHODS

Samples collection and preparation

Collection of samples were included in the period from January to May 2018 of the oral cavity of a 33donors. The collection of each donor swabs from the oral cavity using sterile cotton swabs with a dietary medium. Swabs were taken at four different times per person, including the times after waking up, after washing the mouth with water (rinsing), after breakfast and after using toothpaste. This was done in agreement with the donors. The swabs were transferred to the laboratory directly for cultivation on appropriate culture media.

In this experiment, three types of cultures media were used: Nutrient agar to estimate the total account of microbes and MacConkey agar to detect interobactereaceae and the Mannitol salt agar medium for detection of Staphlococcus bacteria. The preparation of media were based on the

information labeled on the packages by the manufacturer and then sterilized using the autoclave at 121 ° C and 15 lb / inch^2 pressure for 15 minutes. The culturing media then left at laboratory temperature until stiffening. The swabs that were collected from the donors then plotted directly on the culturing mediums used to investigate the bacterial species of the samples. Incubation was done by using an incubator at 37 ° C for 24 hours (Nester *et al*, 2001).

Isolation and diagnosis of bacteria

Bacterial isolates were identified by phenotypic, microscopic and cultural characteristics of growth colonies. The size of the colonies and the shape of their edges and color had been determined (Levinson and Jawetz, 1995). The bacteria were purified by taking a colony of similar characteristics bacterium and culturing them on a same medium. Then the bacteria were stained with Gram stain in preparation for completed the diagnosis using VITEK 2.

Diagnosis using VITEK 2 system

The VITEK 2 system (bioMerieux) is highly automated and uses very compact plastic reagent cards that contain microliter quantities of antibiotics and test media in a 64-well format. The VITEK2 system performs rapid identification based on fluorescence and colorimetric and antimicrobial susceptibility testing. The VITEK2 employs repetitive turbidimetric monitoring of bacterial growth during an abbreviated incubation period. The instrument can be configured to accommodate 30-240 simultaneous tests.

Suspension preparing by sterile swab or applicator stick use to transfer a sufficient number of colonies of a pure culture and to suspend the microorganism in 3.0ml of sterile saline (aqueous 0.9% NaCl, pH 4.5-7.0) in a 12 x 75 mm clear plastic (polystyrene) test tube. The turbidity was adjusted on (0.50-0.63) {McFrland turbidity range for Gram positive and negative is 0.5-0.7} and measured using a turbidity meter called the DensiChekTM (Jorgensen and Ferraro, 2009).

Bacterial antibiotic-resistance test

The resistances of bacterial isolates to some antibiotics were tested by the method of diffusion on agar plates, and this was done after colony activation (Vandepitte *et al*., 1991), Table (1) shows the types of antibiotics used and their code and concentration.

Table (1) Antibiotics and their concentration

Name	Code	Concentration/mcg
Doxycycline	DO	10
Mastdiscs	TS	25
Ceftriaxone	CRO	10
Tobramycine	TOB	10
Mastdiscs	T	30
Gentamicin	CN	10

RESULTS AND DISCUSSION

Bacterial isolation

The study included the identification of microbiological content of the oral cavity during the normal daily practices of several male and female smokers and non-smokers. The total number of 33 donors and ages ranged from 25-35 years. Table 2 shows the distribution of categories and percentages of donors, the number of non-smokers and smokers were 14-11 persons respectively and accounted for 42.4, 33.3 *per cent* respectively samples of the study, while the number of non-smokers and smokers female was 8-0 respectively with a ratio 24.2-0 *per cent* respectively of the study samples.

The results of the laboratory test showed that all samples gave positive growth during the various stages of isolation from the oral cavity with a difference in the numbers and types of microorganisms isolated during the different stages of isolation of the same donor's category. This difference is due to the impact of various practices and habits during the stages of isolation, washing the mouth with water (mouth wash), eating breakfast and using toothpaste .

The results were in agreement with Mahmood (2009) and Hussein (2018) who were able to isolate different bacterial species from all study samples due to the high oral content of microbes.

Table (2) Distribution of donor categories

Isolation Samples		NO.	%
Males	Non-Smoking	14	42.4
	Smoking	11	33.3
Females	Non-Smoking	8	24.2
	Smoking	0	0
Total		33	100

Total bacterial account

The study included identification of the total of bacterial account and the preparation of enterobacteriaceae and the total account of Staphylococcus spp. in the mouth of the donor groups during daily practices. Table (3) shows the total account and percentage of isolation from donor oral cavity at different times.

The results showed that in the case of male non-smokers, the total of bacterial account was higher than those taken after waking and after breakfast, ranging from 37-400, 11-200 cfu/ml and isolates (100 and 75) % for the studied samples respectively. While the lowest account and percentages after washing the mouth with water and after the use of toothpaste as the amounts of 0-37, 5-85 cfu / ml, respectively and isolation rates of (75, 25)% of the samples of isolation, respectively. The Enterobacteriaceae had the highest prevalence after breakfast, ranging between 30-344 cfu/ml and isolation rate of 50%. The lowest incidence of Enterobacteriaceae was recorded in the samples taken after the use of toothpaste and after waking and after washing the mouth with water and ranged between 0-4, 0-22, 0-28 cfu / ml and rates (25, 50, 25)%, respectively. Staphylococcus was the most common in isolates taken after breakfast, which ranged from 5-248 cfu/ml with a 100% isolation rate. And the lowest was in isolates taken after waking and after the use of toothpaste and after washing the mouth with water and ranged between 0-68, 0-53, 0-45 cfu / ml, respectively and isolation rates (75, 25, 75)% , respectively.

In the male samples of smokers, the highest account of bacteria was detected in isolated samples after waking and after breakfast, and ranged between 74-550, 26-240 cfu/ml, respectively, and the lowest account were seen in isolates taken after washing the mouth with water and after use of toothpaste, 5-100, 2-200 cfu / ml respectively and the percentage of insulation was 100% at all stages. The account of Enterobacteriaceae ranged between 0-10, 0-16, 0-30, 0-3 cfu / ml and isolation rates of 27, 27, 64 and 27% for isolations taken after waking, after washing the mouth with water, Use of toothpaste in a row, in which there were no significant differences in numbers during the isolation stages. Staphylococcus bacteria showed that their presence during the isolation phase was between (10-80, 0-38, 3-43, 3-24) cfu/ml, and isolation rates were (100, 64, 100, 27) % after waking and after washing Mouth with water and after breakfast and after using the toothpaste straight.

In the female isolates group, the results showed that the total account of bacteria recorded the highest occurrence after breakfast, which ranged between 20-300 cfu / ml, while the account ranged after waking and after washing the mouth and after the use of toothpaste between (62-96, 3-72, 17-100 cfu/ml) respectively and with 100% isolation rate during the isolation stages. In the Enterobacteriaceae, they were close together and the highest was associated with oral washing (0-80) cfu / ml and isolating rate was 50% of the donors while the account ranged between (5-66, 0-10, 0-24 cfu/ml) For post-wake-up and after breakfast and after use of toothpaste respectively with isolation ratio for the same stages were (100, 50, 25)%, respectively. Staphylococcus had the lowest incidence after waking up which account for 0-3 (cfu/ml) and isolating 80% of the donor females while they were close during the other stages. The account were (68-108, 15-132, 75-100 cfu /ml) for post-oral

washing with water and after breakfast and post-use toothpaste and the isolation ratios of donors were 100% for these stages.

Table (3) the total account of bacterial species isolated from the oral cavity of donors at different times

Sampling Time	Microbe Type (cfu/ml)	Males				Females	
		Non-Smoking		Smoking			
		NO.	%	NO.	%	NO.	%
After Wakeup	Total	37-400	100	74-550	100	62-96	100
	Enterobacteriaceae	0-22	50	0-10	27	5-66	100
	Staphylococcus	0-68	75	10-80	100	0-3	80
After washing mouth with water	Total	0-37	75	5-100	100	3-72	75
	Enterobacteriaceae	0-28	25	0-16	27	0-80	50
	Staphylococcus	0-45	75	0-38	64	68-108	100
After breakfast	Total	11-200	75	26-240	100	20-300	100
	Enterobacteriaceae	30-344	50	0-30	64	0-10	50
	Staphylococcus	5-248	100	3-43	100	15-132	100
After using toothpaste	Total	5-85	25	2-200	64	17-100	100
	Enterobacteriaceae	0-4	25	0-3	27	0-24	25
	Staphylococcus	0-53	25	3-24	27	75-100	100

Bacterial account for donor groups and different isolation stages for different microbial species are not considered as high. Marsh and Percival (2006) indicate that microbial density can reach 1011 (cfu/ml) for healthy people. The non-isolation of any microbial growth of some donor groups is due to the possibility of using antibiotics during the study period, which has a bacteriostatic role for the bacteria in the oral cavity (Cookson et al., 2001). The method of taking the swab from the mouth has a significant role in the accuracy of the results, as the donor is careful to take the sample and the extent to which it takes care of the conditions of cleanliness and sterilization during the taking of the sample and its commitment to sequencing the sequence of isolation phases (Weine, 1996).

The results showed that the microbial content in general is low after washing the mouth with water and after the use of toothpaste. This is due to the saliva and its contents of the microbes during the washing of the mouth with water, and the toothpastes have a significant role in reducing the microbial content of the oral cavity because of its inhibitory capacity due to its content of fluoride. Results were agreed with Hussein (2018) and Nwakanma *et al.*(2014) who found a bacteriostatic role for toothpastes on oral bacteria.

Overall, the results showed no significant differences in the growth intensity of total count, Enterobacteriaceae and staphylococcus for the male's smokers and non-smokers and females of donors groups. The results of this study were agreed with Peltonen *et al.* (2001), who noted that there were no significant differences between smokers and non-smokers when oral health was good and the history of smoking was short (4-5 years) through a study of 24 young smokers and 24 young non-smokers. And they are healthy and are close to the ages of the donors in this study. Results were different with Ogba *et al.* (2017) who found significant differences between smokers and nonsmokers in their study of patients who were referred to hospitals.

As for the differences between males and females, this result differed with Mahmood (2009), which found that females are more likely to have tooth decay and more high in the microbiological content of the oral cavity through a study conducted on male and female patients suffering from tooth decay. This is due to the effect of pregnancy and some hormones which are present in women in the weakening of the tooth bone and protective layers.

As for the effect of the isolation stages on the microbial content of the oral cavity, no previous studies have indicated that this has been discussed.

Bacterial types and account

Table (4) shows the types and preparation of isolated bacterial strains from the oral cavity of donors after different times. Gram positive *Staphylococcus aureus* and gram negative types of *Lelliottia amnigena, Pseudomonas fluorescens, Pseudomonas luteola, Klebsiella pneumonie, Stenotrophomonas maltophilia* were isolated from the oral cavity of donors.

The most isolated bacterial species was Pseudomonas spp, and the highest incidence was for L. luteola bacteria. The account of male smokers and non-smokers after waking was 550 to 400 (cfu / ml) respectively.(150, 210, 275 cfu/ml) for non-smoker males, smoker males and females. While their account decreased after washing mouth with water to 30, 88, 3 (cfu / ml) for non-smoker males, smoker males and females, While their account after use of toothpaste for non-smoker males, smoker males and females 70, 200, 77 (cfu / ml), respectively.

The type of *P.fluorescens* was highest in females, which reached 96, 25, 23 (cfu / ml), after waking and after breakfast and after the use of toothpaste respectively, while not exist after washing mouth with water for the same category. In males, non-smokers and smokers had the highest post-breakfast prevalence, with a total of 50 and 27 (cfu / ml), respectively.

The results were agreed with Lima *et al.*(2015), which isolated Pseudomonas spp. from the oral cavity of health workers in Brazil.

Pseudomonas spp. bacteria are opportunistic pathogens and are widely found in soil, water and food. They can cause many diseases if the body's immune system is weakened, such as middle and outer ear infections, and pneumonia. It colonizes the area of the gum and teeth prone to decay (Burnett and Scherp, 2004), and can also cause arthritis (Lindholm and Clinton, 2013).

S. maltophila bacteria had the highest incidence of non-smoking males during the post-breakfast stages 305 (cfu /ml) followed by 60 (cfu / ml) for females in the post-waking period.

Results were agreed with Trevino *et al.*(2014), which isolated these bacteria from the respiratory tract of a number of patients. These bacteria were previously classified within the genus Pseudomonas and have been isolated from aquatic and food sources. This bacterium can cause pneumonia and exacerbate the condition of asthma and inflammation of the eye (Brooke, 2012).

The highest incidence of *K. pneumonia* in the samples taken after the washing of the mouth with water, which amounted to 80 (cfu / ml) and did not exist in the rest of the stages of isolation, while in smoker males and non-smokers found the highest presence in the stage after breakfast, which reached (35, 15) cfu/ml respectively.

The results were agreed with Ogba *et al.* (2017), which was able to isolate them from the oral cavity of smokers and non-smokers and found them to have a greater number and effect in smokers compared to non-smokers. This bacterial type was also counted from the natural microbial content of the oral cavity. The results were agreed with Mahmood (2009), which isolated this bacterial type from the oral cavity.

K. pneumonia is natural flora found in the mucous membrane lining the mouth that affects the gums as well as the root canal and helps them possess multiple virulence factors (Quardros *et al.,* 2005). It can cause many diseases such as pneumonia, tooth inflammation, urinary tract infection (KO *et al*., 2002).

Table (4) Types and counts of bacterial isolates that are isolated from the oral cavity of donors after different times

Insolation Samples			Types of Bacteria					
			Lelliottia amnigena	P. fluorescens	P. luteola	Klebsiella pneumonia	P. maltophilia	Staph. aures
After Wakeup	Males	Non-Smoking	0	0	400	0	0	68
		Smoking	0	0	550	0	10	80
	Females		0	96	0	0	60	3
After washing mouth with water	Males	Non-Smoking	8	0	30	5	22	45
		Smoking	4	7	88	0	16	38
	Females		0	0	3	80	0	108
After breakfast	Males	Non-Smoking	1	50	150	35	305	248
		Smoking	0	27	210	15	15	43
	Females		0	25	275	0	10	132
After using toothpaste	Males	Non-Smoking	1	15	70	2	2	53
		Smoking	0	0	200	3	0	24
	Females		0	23	77	0	34	100

The results showed that *S. aures* bacteria were present in all donor groups and all stages of isolation but in different count. The highest prevalence was for non-smokers and females in the post-breakfast phase, which was 248, 132 (cfu / ml), respectively, for non-smoker men after waking and 80 (cfu / ml) while the lowest incidence was in female samples after waking up to 3 (cfu/ml).

Results were agreed with Mahmood(2009) and Naji(2016) and Hussein(2018) who were able to isolate *S.aures* from the oral cavity and returned it from its natural flora. These bacteria are characterized by their virulence and antimicrobial resistance. They have been isolated from various areas of oral cavity (Brook et al., 1998). This explains their presence after use of toothpaste, although their numbers are low.

The results showed that *L. amnigena* had the lowest microorganisms present in the mouth and was highest in non-smokers and smokers in 8, 4 (cfu / ml) respectively for isolates taken after breakfast. . It's isolation of the oral cavity was not indicated for previous studies. *L. amnigena* is an intestinal bacterium in which food and water are the main source of their presence (Liu et al., 2016).

The results showed that toothpaste had a bacteriostatic effect by reducing the counts of bacterial isolates of microbial species present in the oral cavity. The disinfectant capacity of the toothpaste was agreed with Hussein (2018), which found toothpaste inhibiting Pseudomonas spp and Staphylococcus spp. The results were also agreed with Nwakanma *et al.* (2014) who found a bacteriostatic effect of toothpastes on Staphylococcus spp. present in the mouth.

The survival of the bacterial species, even in small accounts of bacterial isolates after oral cleaning with water or toothpaste, is due to the ability of these bacteria to adhere to the tissues of the mouth because of the mucous layer production (Miyazaki *et al*. 2002). Which confirmed by Mahmood (2009) how isolated bacteria from the cavity of the mouth from the genus Pseudomonas spp. and Staphylococcus spp and Klebsiella spp and found that all of them have the ability to produce the mucus layer, which helps them to resist the antibiotics and thus increase their survival in the tissues

of the mouth, especially the drilling caused by caries in the mouth and people who suffer from inflammation of the gums, where antibiotic resistance increased.

Sensitivity of bacterial isolates to antibiotics

In order to identify the ability of bacteria isolated from the oral cavity to resist antibiotics, the tablets of some antibiotics were used to detect the inhibitory ability of the isolated bacterial species, the results of the present study showed the effectiveness of antibiotics against bacterial species isolated from gram positive and gram negative bacteria. Table 5 shows the sensitivity of isolated microbial species to antibiotics.

Which showed the results that *L. amnigena* bacteria showed sensitivity to all antibiotics used and this explains the presence of a few in the mouth.

P. fluoreseens showed sensitivity to the antibiotics DO, TOB, T, CN while resistance to TS, CRO. While P. luteola bacteria showed sensitivity to all types of antibiotics used in the test.

The genus *K. pneumonia* was sensitive to all types of antibiotics used except the DO antibiotic, which showed resistance to it.

The sensitivity of the isolated bacterial species to the antibiotics is due to the absence of the role of the antibiotic-resistant gene. The donors were considered to have a relatively healthy mouth and their bacteria did not develop to become resistant to antibiotics.

The results differed with Mahmood (2009), which found that the bacteria isolated from the oral cavity of the patients, which were of the genus Pseudomonas spp and Klebsiella spp, showed resistance to a large number of antibiotics used, but they become sensitive to a wide range of antibiotics if neutralized the gene responsible for antibiotic resistance.

The results showed the sensitivity of *P. maltophilia* to all types of antibiotics used. The results differed with Trevino *et al.* (2014) .This type of bacteria is resistant to the antibiotic TOB, CN and also resistant to the antibiotic ampicillin, because the bacteria were isolated from infection of the patients and thus possessed genes that make them produce vital membranes that enable them to resist antibiotics.

The genus *S. aureus* was resistant to antigens of type TS, CRO, TOB, CN while showing sensitivity to the antibiotics DO, T. Results were agreed with Naji (2016) isolated from the oral cavity with a resistant to TOB, TS and sensitivity to T.

Table (5) Sensitivity of isolated Bacterial species to antibiotics

Bacteria Types	Bacteria Types					
	Lelliottia amnigena	P. fluorescens	P. luteola	Klebsiella pneumonia	P. maltophilia	Staph. aureus
DO	S	S	S	R	S	S
TS	S	R	S	S	S	R
CRO	S	R	S	S	S	R
TOB	S	S	S	S	S	R
T	S	S	S	S	S	S
CN	S	S	S	S	S	R

The non-regular use of antibiotics in different types and concentrations without consulting a physician enables the bacteria in the body to develop themselves and possess the antibiotic-resistant gene. Antibiotics can reduce the microbiota of the mouth and allow pathogens to grow, multiply and cause injury (Emmerson and Eston, 1997).

Antibiotic resistance of bacteria are due to the presence of many factors such as the production of enzymes (Pool, 2005), and the possession of bacteria, the active stream mechanism, which reduces the accumulation of antibiotics within the bacterial cell (27) or by reducing the permeability of the outer wall (Braunwald *et al*., 2001), and the causes of bacterial resistance to antibiotics include mutations such as mutations that lead to the super-production of effective flow systems (Wang, 2004).

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تأثير بعض طرائق تنظيف الاسنان في المحتوى الميكروبي لتجويف الفم

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المستخلص

نفذت الدراسة في الفترة من شهر كانون الثاني ولغاية شهر ايار من عام 2018 تضمنت محاولة التعرف على اعداد وانواع المحتوى الميكروبي لتجويف الفم خلال الممارسات اليومية الطبيعية بأوقات مختلفة والتي كانت بعد الاستيقاظ من النوم وبعد غسل الفم بالماء (المضمضة) وبعد الفطور وبعد استخدام معجون الاسنان لـ 33 متبرع من اناث وذكور مدخنين وغير مدخنين وبأعمار تراوحت بين 25–35 سنة. بينت نتائج الدراسة ان جميع فئات المتبرعين اعطت نموا موجبا خلال مراحل العزل، ولكن لم تكن هناك اختلافات كبيرة في كثافة النمو للعدد الكلي والمعوي والمكورات العنقودية لفئات المتبرعين، كما ان الاعداد التي سجلت لا تعتبر خطرة على صحة الفم وذلك لكون صحة فم المتبرعين جيدة وتاريخ التدخين قصير، وقد كان اعلى تواجد للعدد الكلي للبكتريا في العزلات المأخوذة من المدخنين بعد الاستيقاظ والذي بلغ 74–550 cfu/ml . كما تضمنت الدراسة تشخيص الانواع الميكروبية المعزولة باستخدام جهاز VITEK2 اظهرت النتائج ان الانواع البكتيرية المعزولة هي *Staphlococcua aures, Lelliottia amnigena, Pseudomonas fluorescens, Pseudomonas luteola , Klebsiella pneumonie , Stenotrophomonas maltophilia* وباعداد مختلفة ، تم اختبار مقاومة البكتريا تجاه بعض المضادات الحياتية والتي كانت من نوع Doxycycline(DO), Mastiscs(TS), Ceftriaxone(CRO), Tobramycine(TOB), Mastiscs(T), Mastdiscs(T), Gentamicin(CN) . والتي اظهرت النتائج ان بكتريا L.amnigena و S.maltophilia كانتا حساسة لكل انواع المضادات المستخدمة، اما بكتريا P.fluorescens فقد كانت حساسة للمضادات CN, T, TOB, DO ومقاومة للمضادات CRO, TS ، في حين كانت البكتريا من نوع K.pneumonie حساسة لجميع المضادات المستخدمة ما عدا المضاد DO، اما بكتريا S.aures فقد اظهرت النتائج مقاومتها للمضادات نوع CN, TOB, CRO, TS وحساس للمضاد T, DO.

الكلمات المفتاحية: تجويف الفم، الممارسات اليومية، عزل البكتريا، VITEK