



Republic of Iraq  
Ministry of Higher Education  
and Scientific Research  
University of Baghdad  
College of Dentistry



**A COMPARATIVE STUDY BETWEEN  
WATERPIPE, CIGARETTE AND NON-SMOKERS  
IN RELATION TO DENTAL CARIES, VIABLE  
COUNT OF MUTANS STREPTOCOCCI,  
SECRETORY IGA , AND LACTOFERRIN**

A thesis submitted to the council of the College of Dentistry- University of  
Baghdad in partial fulfillment of the requirement for the degree of *Master  
of Science in Oral Microbiology*

By

*Ausama Ahmed Fathallh*

*B.D.S*

Supervised by:

*Prof. Dr. Maha Adel Mahmood*

*B.Sc., M.Sc., Ph.D. /Microbiology*

2021 A.D.

1442 A.H.

## ABSTRACT

**Background:** Waterpipe and cigarette are two types of tobacco smoking, their consuming is associated with many adverse effects on human health. In addition to their hazards to general health, tobacco use has detrimental effects on the oral cavity, numerous studies around the world have reported a significant relationship between smoking and increase dental caries and viable count of cariogenic bacteria, as well as their detrimental effect on saliva, it causes a reduction in salivary pH and salivary flow rate in addition to their controversial effect on salivary IgA and lactoferrin.

**Materials and Methods:** All of the participants are adult male aged between 25-60 years, the participants were divided equally into three groups: waterpipe smokers, cigarette smokers, and non-smokers, each group included 28 males. Dental caries was measured by use of DMFT index, *Streptococcus mutans* and *Streptococcus sobrinus* were isolated by using a selective medium SB 20M (Sugar bacitracin-20 modified) agar. Sandwich ELISA technique was used for detection and estimation of the level of salivary IgA and lactoferrin. Saliva was collected in a graduated test tube in order to determine salivary flow rate whereas salivary pH was measured directly using a pH Meter to prevent any degeneration of the sample.

**Result:** This present study showed a significant ( $p \leq 0.01$ ) higher DMFT, DT, MT, and FT among cigarette smokers group than both waterpipe smokers and non-smokers groups. The viable count of *Streptococcus mutans* was significantly ( $p \leq 0.01$ ) higher in the cigarette smokers group followed by the waterpipe smokers group and then the non-smoker's group, whereas the viable count of *Streptococcus sobrinus* showed no statistical differences.

## ABSTRACT

( $P>0.05$ ) between groups. IgA and Lactoferrin results showed a higher concentration in cigarette and waterpipe smokers group than non-smokers with a highly significant difference ( $p\leq 0.01$ ). While results showed that Salivary Flow Rate and pH were higher in the non-smoker's group followed by waterpipe and cigarette smokers groups with a highly significant difference ( $p\leq 0.01$ ). The correlation of DMFT with *Streptococcus mutans*, *Streptococcus sobrinus* count, and salivary, IgA were significantly positive ( $P\leq 0.05$ ) in the cigarette smokers group only. Similarly the correlation between Lactoferrin and salivary IgA also showed a significant ( $p\leq 0.01$ ) Moderate positive correlation in the cigarette smokers group.

**Conclusions:** Dental caries increase in cigarette smokers, whereas the DMFT and *Streptococcus mutans* viable count (CFU/ml) are less affected by waterpipe than cigarette smoking, A positive significant correlation are found between DMFT with . *Streptococcus mutans*, *Streptococcus sobrinus* and salivary IgA only in cigarette smokers. Smoking increase salivary IgA and lactoferrin concentrations while it reduces Salivary flow rate and pH of saliva. A significant correlation was found between lactoferrin and salivary IgA only in cigarette smokers.



جمهورية العراق  
وزارة التعليم العالي والبحث العلمي  
جامعة بغداد  
كلية طب الاسنان

## دراسة مقارنة بين الاركيلة, السجائر وغير المدخنين فيما يتعلق بتسوس الاسنان ، والعدد الحي لبكتيريا المكورات المسبحية الميوتنس ، الاجسام المناعية اللعابية نوع أ واللاكتوفيرين

رسالة مقدمة الى مجلس كلية طب الاسنان في جامعة بغداد كجزء من متطلبات نيل درجة  
الماجستير في علوم الاحياء المجهرية الفموية

من قبل

اسامة احمد فتح الله

بكالوريوس طب وجراحة الفم والاسنان

باشراف

أ.د. مها عادل محمود

بكالوريوس وماجستير ودكتوراه احياء مجهرية