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

Age Related Changes Affecting Some Salivary Physico-Chemical Properties and Dental Caries Experience among Different Age Groups in Males

A Thesis
Submitted to the Council of College of Dentistry, University of Baghdad in Partial Fulfillment of the Requirements for the Degree of Master of Science in Preventive Dentistry

By
Hiba khaldoun Abdullah Al-Tamimi
B.D.S

Supervised by
Assist. Professor Dr. Nadia Aftan Al-Rawi
B.D.S., M.Sc., Ph.D.

Baghdad-Iraq

2018A.D **1440 A.H.**

Abstract

Background: Ageing process is an incremental normal physiological phenomenon with advanced functional weakening of entire organs and body structures. The understanding of the usual physiologic changes associated with aging process is an important issue.

Aim of the study: This study was conducted to determine the impact of ageing process on the selected physicochemical properties of saliva and their effect on dental caries experience at different age groups among healthy adults' males.

Subjects, materials and methods: This descriptive comparative study was conducted among ninety males in three study groups aged; (20 years, 40 years and 60 years old) respectively, as representative sample for young, middle age and old age, thirty healthy subject in each study group. Dental caries experience represented by Decay Missing Filled Surfaces index recorded from the total ninety subject according to the criteria of World Health Organization (1987). Un-stimulated saliva was collected to determine salivary flow rate followed by estimation of salivary potential hydrogen and salivary viscosity. The salivary samples were analyzed chemically for the assessment of salivary calcium, phosphorous, magnesium, potassium, total protein and alkaline phosphatase; later, statistical analyses were done using SPSS (version 22) with Microsoft excel.

Results: The highest percentage of caries free was recorded among the 20 years old (20%), compared with 40 years (16.7%) and zero in 60 years old individual. Caries experience expressed by (Decay Missing Filled surface index) evaluated clear increasing with age which the highest mean value was in 60 years old when compared with 40 years and the lowest (Decay Missing Filled surface index) was in 20 years, with highly significant differences among different age groups. The largest fraction of Decay Missing Filled surface index was Missing surface fraction among all age groups with the highest mean value of Missing surface fraction was in 60 years old individuals when compared with 40 & 20 years old with highly

significant differences among all age of the present study. The Decay surface fraction also increased, but with no significant difference. The highest mean value of Filled surface fraction was recorded in 40 years old individuals followed by 60 years old and 20 years old with no significant differences. Regarding salivary physical properties, salivary flow rate decreased with age but still within normal range, while salivary potential hydrogen and salivary viscosity increased slightly, with highly significant differences for both salivary flow rate and salivary viscosity among the three age groups. All salivary chemical constituents evaluated decreased with age, except salivary alkaline phosphatase was found to be increased. Statistically significant differences was found regarding salivary calcium, potassium, phosphorous, magnesium and total protein among different age group. A significant correlation was recorded between salivary flow rates with Decay surfaces fraction among all age groups. In addition, a significant correlation was recorded between salivary potential hydrogen with Missing surface fraction and Decay Missing Filled surface index, while salivary viscosity was found to recorded significant correlation with Missing surface fraction in 60 years old. A negative correlations were found between calcium with Decay Missing Filled surface index in 40, 60 years old, while, a significant negative correlation was found between magnesium and potassium with Missing surface, Decay Missing Filled surface index in 60 years old. A positive significant correlation was found between alkaline phosphatase with Decay surface fraction was recorded in 40 years old, a significant positive correlation between total protein with Decay surface, Missing surface fraction and Decay Missing Filled surface index was recorded in 60 years old.

Conclusions: According to the results of the present study, there is an impact of ageing process on selected salivary constituents, the salivary physical properties showed slightly change but within normal limit, that because the all participants were healthy, while the salivary chemical compositions found to be decreased except the alkaline phosphatase which increased with age. Concerning the higher

caries experience (especially the Missing surfaces fraction) among all age groups (specifically in 60 years old), it is crucial to frame out the necessity for refining the police of preventive programs for better oral health knowledge in optimistic direction and oral experience among all age groups.