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ANALYSIS OF SALIVARY BIOMARKERS CORRELATED WITH DIFFERENT PARAMETERS OF TOBACCO USE AMONG LOCAL POPULATION OF PAKISTAN

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Abstract:

Introduction: *The biochemical signaling involved in the periodontal disease inflammatory disease process consists of three biological phases i.e. inflammation, connective tissue degradation, and alveolar bone turnover.* ***Aims and objectives****: The main objective of the study is to analyze the salivary biomarkers correlated with different parameters of tobacco use among local population of Pakistan.* ***Material and methods:*** *This cross sectional study was conducted in Lahore general hospital, Lahore during November 2018 to March 2019. The data was collected from 100 patients who were used tobacco from last one year. The age range for this study was 200 to 60 years. Age, duration of use of tobacco, frequency of use, type of tobacco used and site of placement of tobacco in oral cavity were noted.* ***Results:*** *The data was collected from 100 participants. The mean age of the participants was 35.65 years. Levels of salivary IL-8 were found from 173. 48 pg/ml to 296.78 pg/ml with mean and standard deviation of 173.48±46.52pg/ml. Regarding educational status in tobacco users and non-users, 59.5% and 36.4% were uneducated, respectively. Most common reason for using tobacco was that they were just addicted to it.* ***Conclusion:*** *It is concluded that there was a high level of IL-8 were present in tobacco users. There is a positive correlation between salivary biomarkers and IL-8 levels and frequency of tobacco usage.*

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INTRODUCTION:

The biochemical signaling involved in the periodontal disease inflammatory disease process consists of three biological phases i.e. inflammation, connective tissue degradation, and alveolar bone turnover. An intermediate mechanism that lies between bacterial stimulation and tissue destruction is the production of cytokines, which stimulates inflammatory events that play an important role in leukocyte recruitment and may directly or indirectly modulate osteoclast formation [1]. Almost one-fifth of the tobacco used in the world is smokeless form. Smokeless tobacco products are highly addictive due to their high nicotine content. These products also contain carcinogenic compounds such as Tobacco-Specific N-nitrosamines (TSNAs), which eventually lead to an increased risk of oral cavity, laryngeal and oesophagal cancer [2]. An increased risk of mortality due to cardiovascular diseases has also been observed among smokeless tobacco users [1]. Around 10 million people are estimated to die of tobacco use in developing countries by 2030, and this figure is higher than the figures estimated for AIDS, drug abuse, road accidents, murder and suicide [3].

Naswar is categorized as one of the smokeless tobacco products (STPs), the ingredients of which are mainly sundried crushed local tobacco, ash, calcium oxide (slaked lime), and sometimes flavoring agents (e.g., cardamom, menthol) as well as coloring agents (indigo). It is commonly used in Pakistan, Afghanistan, Iran, Central Asia and South Africa [4]. Naswar usage is gaining popularity as it is now available and being consumed in different parts of the world including England. It is prepared and wrapped into small plastic bags which even lack safety warnings [5]. It is used mostly by applying and retaining it in the vestibular cavity adjacent to the buccal or labial mucosa or at times under the tongue. All the other types of STPs are consumed via chewing but naswar is never bitten because of its bad taste [6].

Smokeless tobacco (SLT) consumed orally or nasally has been in use for as long as other forms of tobacco. A conceptual model of SLT-associated carcinogenesis postulates that carcinogens present in SLT products are ingested and processed, leading to metabolic activation of carcinogens. The carcinogens cause formation of DNA adducts and subsequent mutations in *K-ras*, *p53* and other genes, leading to uncontrolled cell growth [5].

Aims and objectives

The main objective of the study is to analyze the salivary biomarkers correlated with different parameters of tobacco use among local population of Pakistan.

MATERIAL AND METHODS:

This cross sectional study was conducted in Lahore general hospital, Lahore during November 2018 to March 2019. The data was collected from 100 patients who were used tobacco from last one year. The age range for this study was 200 to 60 years. Age, duration of use of tobacco, frequency of use, type of tobacco used and site of placement of tobacco in oral cavity were noted. A morning sample of unstimulated whole saliva was collected. Collected samples were tested for levels of interleukin-8 cytokine by enzyme-linked immunosorbent assay (ELISA) procedure. Frequency of usage of tobacco were also noted.

Statistical analysis

The data was collected and analysed using SPSS version 21.0. Frequencies were also calculated regarding the type, frequency of tobacco used, and site of placement.

RESULTS:

The data was collected from 100 participants. The mean age of the participants was 35.65 years. Levels of salivary IL-8 were found from 173. 48 pg/ml to 296.78 pg/ml with mean and standard deviation of 173.48±46.52pg/ml. Regarding educational status in tobbaco users and non-users, 59.5% and 36.4% were uneducated, respectively. Most common reason for using tobbaco was that they were just addicted to it.

Table 01: Descriptive statistics of patients and usage of tobacco

	Age (years)	IL-8 levels (pg/ml)	Duration of use
N	45	35	3
Mean	35.65	173.48	5.42
Std.deviation	4.67	46.52	3.45
Range	27	173.20	25
Min	29	109.43	2
Max	50	296.78	35

DISCUSSION:

Salivary cytokines are produced during periodontal inflammation and tissue destruction. Smoking also increases cytokine levels in the saliva and gingival crevicular fluid, accelerates inflammation, and destroys periodontal tissue [7]. Therefore, many studies have focused on the effect of smoking on cytokines in periodontitis, and adult participants, including middle-aged and older people, have generally been targeted. In our current work, we studied periodontally healthy young adults to avoid the effects of the periodontal conditions on the saliva biomarker concentrations [8]. The primary findings of this study were that salivary IL-1β is associated with active smoking, independent of the amount smoked, and that salivary TNF-α levels positively correlate with the amount smoked [9].

The levels of IL-8 increased with the increased duration of use of tobacco. The black and green types of tobacco are more commonly used with different brand names, with blackone being more strong and injurious to health as it contains more amount of nicotine and high pH value. A new form of tobbaco by the brand name of Tara is now circulating in the market which is even more filtered but serves the purpose [10].

CONCLUSION:

It is concluded that there was a high level of IL-8 were present in tobacco users. There is a positive correlation between salivary biomarkers and IL-8 levels and frequency of tobacco usage. Future longitudinal studies are recommended to determine whether these two biomarkers could be of help in predicting periodontal breakdown in susceptible individuals.

REFERENCES:

1. Rakhshani F, Sepehri ZA, Keikha M, Rakhshani T, Ebrahimi MR. Paan Use in South-Eastern Iran:The Associated Factors. Iranian Red Crescent Medical Journal. 2011;13(9):659–663
2. Basu R, Mandal S, Ghosh A, Poddar TK. Role of tobacco in the development of head and neck squamous cell carcinoma in an eastern Indian population. Asian Pac J Cancer Prev. 2008;9:381–6.PMid:18990006.
3. Changrani J, Gany FM, Cruz G, Kerr R, Katz R. Paan and Gutka Use in the United States:A Pilot Study in Bangladeshi and IndianGujarati Immigrants in New York City. J Immigr Refug Stud. 2006;4:99–110.
4. Honarmand MH, Farhadmollashahi L, Bekyghasemi M. Use of smokeless tobacco among male students of Zahedan universities in Iran:a cross sectional study. Asian Pacific journal of cancer prevention. 2013;14(11):6385–8.
5. Florescu A, Ferrence R, Einarson T, Selby P, Soldin O, Koren G. Methods for Quantification of Exposure to Cigarette Smoking and Environmental Tobacco Smoke:Focus on Developmental Toxicology. Therapeutic drug monitoring. 2009;31(1):14–30.
6. Yamazaki H, Horiuchi K, Takano R, et al. Human Blood Concentrations of Cotinine, a Biomonitoring Marker for Tobacco Smoke, Extrapolated from Nicotine Metabolism in Rats and Humans and Physiologically Based Pharmacokinetic Modeling. International Journal of Environmental Research and Public Health. 2010;7(9):3406–3421.
7. Benowitz NL, Hukkanen J, Jacob P. Nicotine Chemistry, Metabolism, Kinetics and Biomarkers. Handbook of experimental pharmacology. 2009;192:29–60.
8. Raja M, Garg A, Yadav P, Jha K, Handa S. Diagnostic Methods for Detection of Cotinine Level in Tobacco Users:a review. Journal of Clinical and Diagnostic Research:JCDR. 2016;10(3):4–6
9. Stanfill B, Connolly GN, Zhang L, Jia LT, Henningfield JE, Richter P, et al. Global surveillance of oral tobacco products:total nicotine, unionised nicotine and tobacco-specific N-nitrosamines. Tobacco Control. 2010;20(3):e2.
10. Huque R, Shah S, Mushtaq N, Siddiqi K. Determinants of Salivary Cotinine among Smokeless Tobacco Users:A Cross-Sectional Survey in Bangladesh. PLoS ONE. 2016;11(8):e0160211.