

Dietary Modification as a Part of Prescription in Inflammatory Lesions of Oral Cavity: A Need of the Hour

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Food is an integral aspect of human life and constitutes major portion of the intake on a daily basis. The dietary patterns are highly distinctive not only for any religion but also for geographic locations. Even a particular geographic location might show vast distinctiveness in terms of consumption of food on a day-to-day basis.

Food and dietary patterns have evolved quite vigorously over the period due to quest for the satisfying taste buds. In contrast to traditional dietary patterns, modern dietary patterns have a majority comprised of fast foods. Fried and baked dietary items have been drastically increased in today's time as the evolution of food take place.

Recently there is growing evidence that heated oil (frying of food in oil) and associated food items are responsible for the oxidative stress and elevated cytokines in the blood.¹ Moreover, diets such as starches, saturated trans-fats, and sugar are also known to promote inflammation. Westernization of the diets (which is now available across the world due to globalization) has also known to increase C-reactive protein (CRP), interleukin-6, E-selectin, soluble vascular adhesion molecule-1, and soluble intercellular adhesion molecule. Dietary polyunsaturated fatty acids (PUFAs) are also known to modulate gene expression involved in inflammatory disorders by regulating the activity of transcription factor nuclear factor (NF)- κ B.²

With growing and consistent evidence associated with dietary factors and inflammation, investigators have developed dietary inflammation index. This index calculates the inflammatory potential of a person's diet. Numerous studies in the literature have shown a positive correlation between dietary inflammation index, higher serum inflammatory markers, and disease progression.³

Role of nutrition in oral health has been widely investigated in the literature.⁴ Majority of inflammatory disorders as found in the oral cavity by virtue presence of teeth and plethora of microorganisms. Moreover, oral lichen planus, lichenoid reactions, aphthous ulcerations, etc., are some of the commonly occurring immunological disorders, which are characterized by elevation of cytokines and varying degrees of inflammation at the local site. Apart from these, there are many ulcerative and erosive conditions of the oral cavity characterized by oxidative stress and inflammation. Even in oral submucous fibrosis role of cytokines has been found in the initiation and progression of the diseases.^{5,6} As discussed previously, literature is flooded with the scientific evidence that suggests dietary factors plays a major role in initiating and promoting inflammation in the body. Thus, it is quite conceivable that even diet could possibly aggravate those conditions of oral cavity. However, there is very limited literature on the role of inflammatory diet on the initiation and progression of inflammatory oral pathologies. There is a dire need for research on this aspect, which will guide clinicians for the incorporation of dietary modifications as a part of therapeutic intervention either

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alone or supplementary to standard medicinal treatment. We believe that dietary modification has great therapeutic potential that can completely abort the need for standard medicinal treatment. The systematically conducted randomized controlled trial in this regard is the need of the hour.

Dietary modulated inflammation is suggested to relate to epigenetic regulation. Among possible epigenetic regulatory pathways, DNA methylation, histone remodeling, and regulation by small RNAs. The potential involvement of epigenetic modulation by diet to drive inflammation is suggested as a factor behind various pathophysiological disorders, including inflammatory lesions in the oral cavity, colon carcinogenesis, and liver cirrhosis, etc.^{7,8} Therefore, molecular studies are warranted to delineate pathways that promote proinflammatory lesion or anti-inflammatory reactions affected due to the dietary choices between high fiber diet and high fat/processed sweeteners. Besides a direct role in the cellular modulations, dietary choices between high fiber diet over high fat/processed sweeteners are having the potential to modulate microbiotas in the local niche of the oral cavity. In summary, a prescription to the potential patient to opt for a choice of high fiber diet over high fat/processed sweeteners may help to alleviate inflammatory lesion via various cellular adaptations, including alleviation of oxidative stress, metabolic reprogramming, epigenetic modulation, and activation of transcriptional factors such as NF- κ B.

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