



Usage of Biomarkers for Periodontitis Diagnostics

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ABSTRACT

Periodontal disease is the human population's most common oral condition; it can cause loss of teeth if periodontitis is not treated in its initial stages. Medical measurements are the basis for the diagnosis of periodontitis. Actually, however, other diagnostic and tracking solutions are being explored with the development of technology. In reality, where different biological fluids were used as the source of the sample, various types of biomarkers were evaluated. We will try to summarize current biomarkers at various stages of periodontitis and compare the periodontal biomarkers tested so far and their utility in periodontitis diagnosis and monitoring.

Keywords: Periodontal disease; Medical measurements; Biomarkers, Diagnosis and Monitoring

INTRODUCTION

Periodontitis is an inflammation of the gums that is severe. It's caused by bacteria on your teeth and gums that have been left to accumulate. Your bones and teeth may be weakened as periodontitis progresses. The harm can, however, be prevented if periodontitis is treated early and good oral hygiene is maintained. This disease is triggered by specific micro-organisms or groups of specific micro-organisms that eventually contribute to a higher degree of recession, or both. They cause the tissue to be damaged while these conditions persist, and the tooth to be lost. This disrupts the patient's chewing, phonation, and esthetics, which impact the quality of life. Traditional periodontitis treatment eliminates the prevalence of microbes by means of mechanical interruption and the removal of the bacterial deposits forming on the surfaces of the teeth and adjacent soft tissues.

Biomarkers for their diagnosis

An objective indicator that captures what is happening in a cell or an organism at a given moment is a biomarker (short for biological marker). For your wellbeing, biomarkers may act as early warning systems. High bloodstream levels of lead, for example, may suggest the need to test for nervous system and cognitive disorders, especially in children. Biomarkers play an important role in throwing light on environmental exposure, human biology, and disease relationships. Biomarkers may be used by scientists to better understand basic

Biomarkers may be used by scientists to better understand basic biological processes, advance the science of exposure, and transform research results into realistic applications for medical and public health.

Proteins & cytokines active in the periodontitis inflammatory phase

Inflammation has emerged as a defensive reaction to an injury, is a primordial reaction that, in general, destroys or neutralizes foreign organisms or materials; the inherent inflammatory reaction begins in minutes and resolves in a matter of hours if all is well. In addition, for weeks, months, or even years, chronic inflammation continues.

Several pro-inflammatory cytokines have been shown to be involved in periodontitis pathogenesis, including interleukins such as IL-1, IL-6, IL-12, IL-17, IL-18, and IL-21; tumor necrosis factor alpha (TNF alpha); and interferon (IFN- γ).

Determined biomarkers in saliva

Saliva is a seromucous secretion consisting of 99 percent water; nevertheless, saliva also consists of glycoproteins, phosphate ions bicarbonate, sodium, chlorine, fluorine, calcium, and potassium, and has a neutral pH. Some scholars have proposed that these salivary constituents can actually be useful markers of local and systemic disorders due to the several characteristics of saliva.

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CONCLUSION

Over the past two decades, there has been an increasingly growing trend in the field of oral disease diagnosis to establish methods for tracking periodontitis. Major advances have been made in the understanding of the mediators involved in the development and progression of periodontitis, from physical measurements such as periodontal monitoring to advanced genetic susceptibility analysis and molecular assays for the identification of biomarkers at the various stages of the disease. A primary objective of periodontal research would be to establish a broad spectrum of marker factors.

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