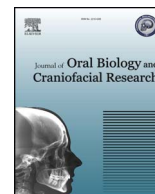




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A systematic review of biomarkers of gingival crevicular fluid: Their predictive role in diagnosis of periodontal disease status

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GCF-Gingival crevicular fluid
MMP's-Matrixmetalloproteinases
AST-Aspartate Aminotransferase
ALP-Alkaline Phosphatase
PG-Prostaglandins

ABSTRACT

The objective of the study was to conduct a systematic review of the literature so as to evaluate and summarize the diagnostic and prognostic potential of GCF. Included studies were systematically analyzed based on PRISMA (Preferred Reporting Items For Systematic Reviews and Meta Analyses) and studies were identified based on the PICO (Glossary of evidence based terms 2007):

- 1) Patients with chronic periodontitis.
- 2) Intervention- NSPT (Non-Surgical Periodontal therapy); NSPT + Chemotherapeutics.
- 3) Comparison between treated v/s non treated sites.
- 4) Outcomes measured: Analysis of variation in constituents of GCF.

Electronic database search of Pubmed, Medline, Google Scholar and Scopus was performed using (MeSH) terms- Gingival Crevicular fluid and Cytokines, MMP's, NE, PGE-2, A2M, B2M, ALP, AST, Osteocalcin and Calprotectin. Articles published between year 2000-2016 were reviewed and were included based on inclusion and exclusion criteria.

Based on this systematic review of literature, it can be concluded that analysis of constituents of GCF can be used as an effective and efficient diagnostic tool of periodontal diseases. These biomarkers in turn with their prognostic significance could act as a valuable tool in the combat of periodontal disease.

1. Introduction

Gingival crevicular fluid (GCF) is considered a serum transudate or inflammatory exudate that is derived from the periodontal tissues and can be collected at the orifice or from within the gingival crevice.¹

The potential diagnostic importance of gingival fluid was recognized more than six decades ago and serious investigations of the dynamics of GCF production began with the epoch making reports of Brill and co-workers in 1950's.^{2,3}

The gingival tissue is subjected to a continuous mechanical and bacterial onslaught. Saliva, sulcular fluid, epithelial surface keratinisation and initial stages of inflammation provide resistance to these constant irritations.⁴

The sulcular fluid is produced in minute quantities from a completely healthy periodontium, being nearly similar in composition to blood plasma, GCF became a source for non-invasive testing for periodontal disease presence. Its various constituents have been assayed to evaluate its efficacy as a prognostic marker before and after conventional periodontal therapy. Thus, GCF has been a much researched fluid

and holds prominence in published periodontal literature (Fig. 1).

Gingival crevicular fluid (GCF) has been employed in the analysis of periodontitis, taking into account indicators and markers of connective tissue and bone destruction therefore has often been used as a useful indicator in determining the severity of periodontal diseases.⁵ The action of inflammatory mediators results in an increased volume of fluid coming out of the pocket which could be partly attributed to increased vascular wall permeability. Thus the composition of GCF alters with the status of inflammation, therefore, has often been considered as a reliable indicator of underlying tissue changes.

The biochemical analysis of the fluid offers a non invasive means of assessing the host response in periodontal disease. Active phase of periodontal disease process may be assessed by the constituents of gingival fluid. Bacterial enzymes, bacterial and connective tissue degradation products, host mediated enzymes, inflammatory mediators, extracellular matrix proteins can be detected in gingival crevicular fluid during the active phase of periodontal disease. It has also been re-researched as a prognostic indicator, to assess its role as an indicator of successful therapeutic outcomes.

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