

**QUANTITATIVE DETERMINATION OF
ESSENTIAL ELEMENTS IN SALIVA
ASSOCIATED WITH DIFFERENT SEVERITIES
OF PERIODONTAL DISEASE AND ITS
CORRELATION WITH HISTOPATHOLOGICAL
PICTURE**

A thesis

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Abstract

Background

Chronic gingivitis and periodontitis are diseases which are widely spread all over the world. The major aetiological factor is dental plaque. The inflammatory response is affected by many local and systemic factors. Saliva plays an important role in the oral cavity. Essential and trace elements in saliva can have an important effect, their definitive role is not very understood but it could be a biochemical marker that can aid in the diagnosis and prognosis of periodontal diseases.

Aim of study

To determine the following essential elements in saliva (calcium, inorganic phosphorus, magnesium, potassium and sodium) from subjects with healthy periodontal status and those with gingivitis, chronic and aggressive periodontitis assessed by the following clinical parameters:

- a- Plaque index system.
- b- Gingival index system.
- c- Probing pocket depth.
- d- Bleeding on probing.

Then to correlate these elements with histopathological and clinical parameters.

Materials and methods

Thirty subjects with age ranging from 22-52 years (14 males, 16 females) were selected and classified into four groups, each one consist of 8 subjects except fourth group consist of 6 subjects:

- Group 1: Subjects with normal healthy gingiva.
- Group 2: Patients with gingivitis.
- Group 3: Patients with chronic periodontitis.
- Group 4: Patients with aggressive periodontitis.

Saliva was collected from all subjects. Analysis of elements was performed using Atomic Absorption Spectrophotometer, hollow cathode lamps were used for Ca, Mg, K and Na. Inorganic P was measured by colorimetric method using a ready kit (SPINREACT, S.A. Spain).

Clinical measurement of periodontal parameters was used including Plaque Index, Gingival Index, Probing Pocket Depth and Bleeding on Probing on all teeth.

Histopathological study was performed in which representative fields were chosen to count Neutrophils, Lymphocytes, Macrophage and Plasma cells.

Results

The results indicate a linear increase of the periodontal parameters with increasing severity of periodontal disease, similarity in histopathological study. The inflammatory cells increased with increasing severity, and plasma cells were seen more in periodontitis both chronic and aggressive.

The biochemical analysis of saliva did show a high value for Ca in aggressive periodontitis while P and K were high in the state of health, Na proved to be high in the gingivitis group.

Correlation statistical analysis showed significant relationship between inflammatory cells and increasing severity of periodontal disease. For essential elements the state is variable.

Conclusion

Calcium has a mean equal values for all groups approximately while P was high in the healthy status, the difference among groups are not high. Although Mg showed a high value in the gingivitis group with low value in the health status, the values for the other two groups were inconclusive.

Potassium was only low in the aggressive group and so is Na, in addition Na is also low in the gingivitis group.