

Scientific release
from the European
Federation of
Periodontology

Editor:
Iain Chapple,
Birmingham, UK

Rapporteurs: Carbajal, M., Desai, K.,
Horwitz, R., Hussain, K. and D'Aiuto, E.

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Affiliation:

Prepared by the residents of the
Postgraduate Programme of
Periodontology at the Department of
Periodontology, UCL Eastman Dental
Institute, London, United Kingdom.

Study:



Study: Lipid-lowering agents use and systemic and oral inflammation in overweight or obese adult Puerto Ricans: the San Juan Overweight Adults Longitudinal Study (SOALS)

Andriankaja, O.M., Jimenez, J.J., Munoz-Torres, F.J., Perez, C.M., Vergara, J.L., Joshipura, K.J.
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**Relevant
background
to study:**

Periodontitis is an inflammatory disease triggered by bacterial dysbiosis. An interrelationship between periodontal and systemic inflammation could represent a plausible biological explanation of the link between periodontitis and systemic diseases,

including cardiovascular disease, diabetes, and respiratory disease. There is evidence that lipid lower agents (LLAs) reduce oral inflammation. However, the effect of LLAs on C-reactive protein (CRP) has not been investigated.

Study aims:

To assess the association between lipid lowering agents (LLA), C-reactive protein, and oral inflammation.

Methods:

Patients were selected from the ongoing "San Juan Overweight Adults Longitudinal Study" (SOALS) including individuals who were overweight (BMI ≥ 25 kg/m²) and obese (BMI ≥ 30 kg/m²). Exclusion criteria included diabetes, fewer than 4 teeth, orthodontic appliances, pregnancy, and any health condition that could increase the risk of systemic complications from the periodontal examination. A total of 1,300 participants were recruited. Questionnaires of medical and socio-demographic information were recorded. In addition, the following were recorded: BMI, blood pressure, percentage body fat, fasting blood samples, and CRP values.

The periodontal examination included probing depth (PD), recession, plaque index (PI), and bleeding upon probing (BOP). BOP was recorded on a tooth level and plaque index was recorded around six preselected 'Ramfjord teeth' (Fleiss et al. 1987). Dental examiners underwent a two-week training and calibration. The dental probing during calibration showed 96% agreement within 1 mm of CAL between the dental examiners and the NHANES chief examiner.

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Results:

- 23.7% (308/1300) of the sample reported to suffer from dyslipidaemia, and 12% self-reported LLA use.
- LLA-using participants had lower BOP and lower hs-CRP levels in comparison with non-users (BOP: 34.8% vs 52.3%)
- LLA-use was associated with lower percentage of patients (27.7% vs 41.3%) suffering from moderate/severe periodontitis combined with high BOP when compared to non-LAL use.
- After adjustment for possible confounders, the use of LLA was associated with lower odds of elevated hs-CRP levels (OR= 0.58; 95%CI: 0.39-0.85).
- LLA use and moderate/severe periodontitis were associated, when PD was combined with BOP \geq 21% [OR= 0.64 (95% CI: 0.42-0.96)].

**Limitations,
conclusions
and impact:****Limitations:**

- Medical conditions and LLA intake was self-reported using an interview-administered questionnaire. However, the article did not disclose the contents of the questionnaire nor its validity.
- The inclusion of tooth-level analysis for bleeding on probing may have led to an overestimation in inflammation.
- Sample size of test and control groups were significantly different (Control n=1145, Test n=155)
- Multiple statistical tests were used, thus increasing the risk of a type 1 error.
- Because BOP is a surrogate marker of inflammation, it is not clear from the study if LLAs affect inflammation or bleeding only.

Conclusions:

LLA may have an effect in reducing oral and systemic inflammation as assessed by hs-CRP and BOP levels in a sample population of obese adult Puerto Ricans.

Impact:

The data provide evidence of an association between the use of LLAs and a reduced level of periodontal inflammation as measured by bleeding on probing. Further research in this area is needed to ascertain whether this association is causal and reversible and of clinical significance.