

2186 Effect of Dietary Omega-3 Polyunsaturated Fatty Acids on Experimental Periodontitis

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Objective: The host inflammatory response to pathogenic bacteria and not the infectious agents themselves is considered to be the main cause of periodontitis-associated alveolar bone loss. Agents which modify the inflammatory response may be beneficial aids to periodontal therapy. The use of natural products rather than medications for therapeutic manipulation of host inflammatory responses is attracting considerable attention. The anti-inflammatory properties of omega-3 polyunsaturated fatty acids (PUFA) and the role of their oxygenated derivatives as key mediators in resolving inflammation are now well recognized. The aim of this study was to investigate the effect of a high Omega-3 polyunsaturated diet on alveolar bone loss in a rodent experimental periodontitis model.

Methods: 80 mice were fed experimental diets containing either 10% tuna oil or sunola oil (control) for 57 days. After 14 days mice were either (a) untreated or (b) inoculated orally with *Porphyromonas gingivalis*, or (c) a mixture of *P.gingivalis* and *Fusobacterium nucleatum*, or (d) carboxymethylcellulose (treatment control). Soft tissue biopsies were taken from the oral cavity at sacrifice to determine n-3-PUFA concentration in treated and control animals. The maxilla was removed, stained and digitally imaged to assess bone loss around the upper molars.

Results: Omega-3 PUFA levels were significantly higher in oral soft tissues of mice fed tuna oil compared to the control group. Mice fed tuna oil and inoculated with *P. gingivalis* or a combination of *F. nucleatum* and *P. gingivalis* exhibited 72% and 54% less alveolar bone loss respectively, compared to the control group.

Conclusions: Dietary supplementation with fish oil may act as a host modulatory agent in the prevention and/or adjunctive management of periodontitis.

[Seq #211 - Oral Malodor/Instrumentation/Animal Studies](#)

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