Docosahexaenoic Acid Supplementation Found to Reduce Degree of Periodontitis and Gingivitis

Reference:

Docosahexaenoic Acid and Periodontitis in Adults: A Randomized Controlled Trial

Naqvi, A. Z. et al., Journal of Dental Research, 93: 767-773, 2014

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Summary:

‘Periodontitis’ refers to assorted inflammatory diseases (including ‘gingivitis’, others) caused by bacteria which affects the tissues that surround and support the teeth. The symptoms often include gum swelling, redness and bleeding of the gums when flossing or brushing, and can eventually lead to the loosening and loss of teeth if not properly controlled. Since DHA omega-3 (docosahexaenoic acid) has anti-inflammatory properties, the potential benefit of supplementing with DHA on periodontal outcomes was studied. For this purpose, 55 adults (average age of 55 years) with moderate periodontitis participated in a double-blind placebo-controlled trial wherein 27 received 2,000 mg of supplemental DHA daily from an algal source while 28 (placebo group) received an encapsulated vegetable oil devoid of DHA. All subjects ingested an aspirin tablet daily (providing 81 mg of acetylsalicylic acid) throughout the 3-month trial period. Along with various laboratory measurements in the collected blood samples, urine, and GCF (gingival crevicular fluid), the degree of periodontitis was assessed by calibrated dental hygienists using various periodontal measures (including pocket depth and gingival index).

As expected, the DHA levels in the red blood cell samples rose from an average of 3.6 to 6.2 % of total fatty acids in the DHA group over the 3-month period while the levels did not change significantly in the placebo group. Interestingly, a significant local anti-inflammatory action of DHA omega-3 was indicated based on the significant reduction in the concentrations of pro-inflammatory markers (high-sensitivity C-reactive protein and interleukin-1 beta) in the fluid (GCF) after 3 months in the DHA subjects as compared to the controls (placebo group). Of particular interest was the finding that DHA supplementation significantly improved the degree of periodontitis and gingivitis when compared to placebo. Periodontal disease outcomes
measured as pocket depth and gingival index were lower by 28 % and 16 %, respectively, following 3 months of DHA supplementation and these decreases were significantly greater than found within the placebo group. The authors concluded that ‘aspirin-triggered DHA supplementation significantly improved periodontal outcomes in people with periodontitis, indicating its potential therapeutic efficacy’.

Dr. Holub’s Comments:

It is noted that the combination of supplemental DHA along with low-dose aspirin (ASA) was associated with the significant reduction in periodontitis. Thus, it is not known if DHA alone (without ASA) may have resulted in similar benefits. Regarding the many potential mechanisms for the effect of DHA, aspirin-triggered conversion of DHA to ‘resolvin’ may be involved since the resolvins formed from long-chain omega-3 fatty acids in the body are known to help in the resolution of inflammation. The use of DHA omega-3 supplementation may eventually serve as an adjunct strategy for the prevention/management of periodontitis and thus complement treatment approaches which employ mechanical cleaning and application of local antibiotics.