

Effect of plant and marine sources of n-3 fatty acids on markers of bone turnover in healthy adults

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Scientific evidence suggests that n-3 polyunsaturated fatty acids (n-3 PUFA) may exert protective effects on bone. We investigated the effects of n-3 PUFA from plant and marine sources on markers of bone turnover. This was a controlled, single blind, randomized crossover feeding trial. Twenty-five (12 females and 13 males) healthy participants completed the study which included three isoenergetic diets for four weeks each: [1] Control, [2] α -linolenic acid (ALA) rich diet (1.5 oz of walnuts/d, 6 times/wk per 2400 kcal), and [3] eicosapentaenoic/docosahexaenoic acid (EPA/DHA) rich diet (8 oz of salmon/wk per 2400 kcal). Serum markers of bone turnover [α -telopeptide (CTX), procollagen Type I N-terminal propeptide (PINP) and osteocalcin (OC)] and phospholipid (PL) fatty acid composition were analyzed at the end of each diet period. Plasma phospholipid EPA/DHA and ALA were significantly higher in subjects on the EPA/DHA rich and ALA rich diets ($p < 0.0001$), respectively. There were no significant changes in serum CTX, PINP and OC between the diets, but there was a significant negative association between PINP levels and age ($p = 0.005$). In conclusion, we did not observe changes in any of the markers of bone turnover in healthy adults with either plant or marine n-3 PUFA at amounts used in this study.