The Effect of Walnut Supplementation on Dietary Polyphenol Intake in the Walnuts and Healthy Aging Study (WAHA)

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Objectives: The effect of a daily walnut supplement on the intake of total dietary polyphenols and subclasses in a free-living elderly population.

Methods: In this 2-year prospective, randomized intervention trial, dietary polyphenol intake of participants who added walnuts daily to their diets at 15% of daily energy were compared to those in the control group that consumed a walnut-free habitual diet. Walnut group participants received 28, 42, or 56 g/d of packaged walnuts. Dietary polyphenols and subclasses were estimated from multiple unannounced 24-hours dietary recalls, and nutrient data were obtained using the Nutrition Data System for Research (NDSR) software version 2013 (Nutrition Coordinating Center, University of Minnesota, Minneapolis, MN). Phenolic estimates were derived from Phenol-Explorer database version 3.6 (June 2015). All polyphenol intake variables were energy-adjusted, and Mann-Whitney tests were used for comparison between treatments. Total polyphenol rich foods were categorized into food groups and ranked from highest to lowest per contributing food sources.

Results: Compared to the control group, participants in the walnut group had a higher intake of total polyphenol, total flavonoids, flavanols, and phenolic acid in mg/d (IQR): 2480 (1955, 3145) vs 1897 (1369, 2496) ($P < 0.001$); 56 (42, 84) vs 29 (15, 54) ($P < 0.001$); 174 (90, 298) vs 140 (61, 277) ($p = 0.036$); and 368 (246, 569) vs 242 (89, 398) ($P < 0.001$) respectively. Food categories contributing to total dietary polyphenols per 100 grams of intake ranked from highest to lowest in mg/d (SD) were: beverages 846 (726), fruits 397 (334), nuts and seeds 344 (329), legumes 281 (619), vegetables 248 (258), grains 127 (139), chocolates 100 (233), spices 26 (77), and fats/oils 7 (6).

Conclusions: The walnut group had a higher intake of dietary polyphenols compared to those in the control group. Nuts and seeds were the third highest contributing source of total polyphenol in the diets of participants in this study, suggesting that a single food like walnuts added to the daily diet can increase polyphenol intake in a population.

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