

Background

Coronary artery disease, peripheral vascular disease, and stroke are major contributors to morbidity, mortality, and rising health care costs. Heart disease, in particular, remains the leading cause of death in the US, with more than 600,000 deaths/yr (1). While the role of dyslipidemia as a risk factor for cardiovascular disease is well established, skepticism remains about the impact of nutrition(2,3). Current guidelines recommend diet as first line therapy, but controversy surrounds efficacy and what defines an optimal regimen (4). Several large observational studies have shown that plant-focused diet populations (particularly vegans and vegetarians) are at lower risk for ischemic heart disease mortality (5).

The documentary PlantPure Nation presents further insight into the health benefits of a plant-based diet. In the film, Dr. T Colin Campbell, famed biochemist and co-author of the famous “The China Study”, and his son, Nelson Campbell, document the significant improvement in participant’s cholesterol and weight after a brief 10 day “Jumpstart” plant-based diet.

Methods

—53 participants volunteered in several groups (3 cohorts analyzed: 2 groups of residents in a rural community in Mebane NC and 1 group of employees from the Eurosport company)

—Individuals were given 20 freshly prepared meals (2 16oz plant-based meals/day; lunch/dinner) and detailed dietary counseling for a 10 day “Jumpstart” period

—Biometric company collected observational data (Weight, Total Cholesterol, LDL, HDL, and Triglycerides) before and after completing the study

STATISTICAL ANALYSIS

—The PlantPure nation registry data was incorporated into a single spreadsheet. This information was then pre-processed and cleaned (deleting any unstable numbers)

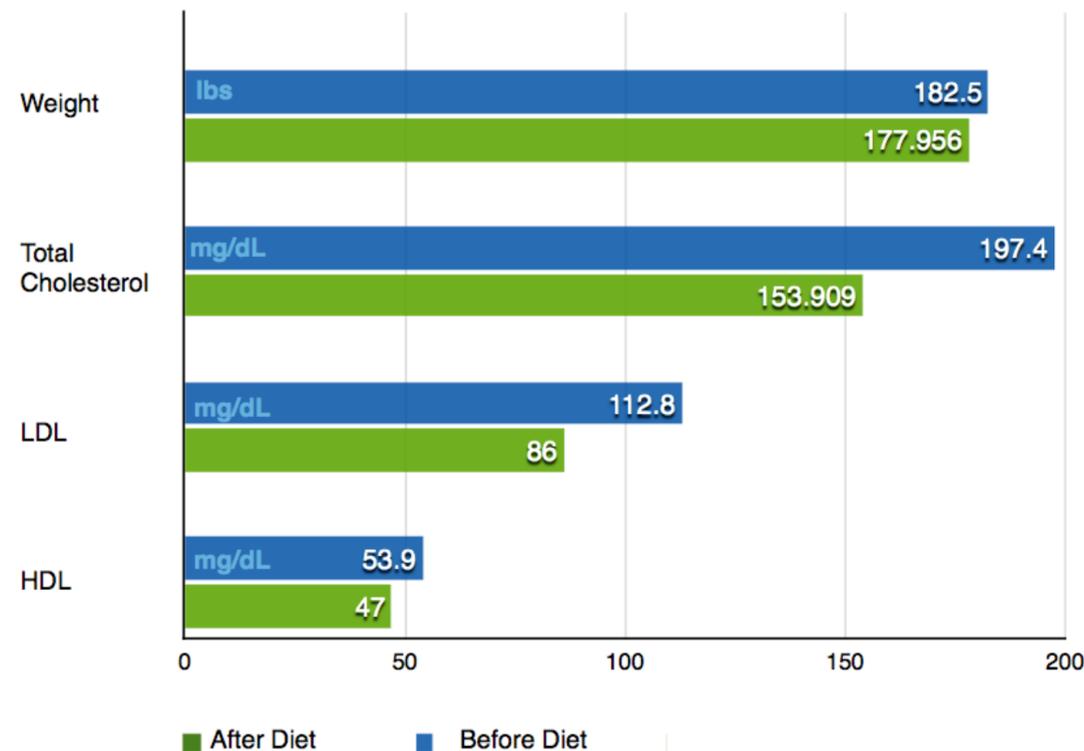
—Performed an exploratory analysis in order to ensure no outliers or unusual data points (scattered plots and q-q plots to verify normality assumptions, identify outliers)

—Data was run through paired 2 sample t-test with one and two-sided alternative hypothesis

—Bonferroni correction for multiple comparisons (5 variables analyzed: Weight, Total Cholesterol, LDL, HDL, and Chol:HDL ratio)

Results

Mean Weight/Total Cholesterol/LDL/HDL before & after plant-based diet



p = 0.01 (alpha = 0.05/Number of Tests; alpha = 0.05/5 tests)

(a) Weight: t = 9.1786, *p-value = 6.491e-13
99 % CI (3.331342, inf)
*mean of the differences = 4.509091

(b) Total Cholesterol: t = 10.897, *p-value = 1.498e-15
99 % CI (33.93665, inf)
*mean of the differences = 43.50909

(c) LDL: t = 4.4929, *p-value = 2.356e-05
99 % CI (12.92037, inf)
*mean of the differences = 27.87234

(d) HDL: t = 4.4333, *p-value = 8.774e-05
99 % CI (3.029995, inf)
*mean of the differences = 6.92

(e) Chol:HDL ratio: t = 2.0788, *p-value = 0.09755
99 % CI (-Inf, 0.06371209)
*mean of the differences = 0.3145833

Conclusions

This small observational trial using registry data demonstrates that a plant-based diet can lower weight and cholesterol over a very brief period of time. Participants in the 10 day “Jumpstart”, had a statistically significant reduction in weight, total cholesterol, and LDL. Plant diets reduce cholesterol through several defined mechanisms, including viscous fiber and plant sterol inhibiting absorption by binding with bile acids and cholesterol (8,9).

Of note, it is also important to mention there was an HDL reduction, which is consistent with prior studies comparing vegetarians to non-vegetarians. The mechanism of how exactly diet affects HDL is still unclear, but some have suggested lower apo A-1 production rates (7).

This Plant-Pure Nation dietary registry study has several limitations: lack of a control arm, small registry numbers, and lack of information about the nutritional/caloric content of meals. This registry and the results from the study pose important questions about diet and health; however, longer term, larger prospective studies will be needed to clarify questions surrounding plant-based diet and outcomes (morbidity, cardiac/total mortality).

References

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