

EDITORIAL COMMENT

Healthy Plant-Based Diet

What Does it Really Mean?*



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Despite improvements in cardiovascular mortality rates over the past several decades, cardiovascular disease (CVD) remains a leading cause of death in the United States. Multiple studies have linked dietary patterns with incidence of CVD and found that groups consuming predominantly plant-based foods, versus animal-based, have lower rates of heart disease (1,2). Plant-based dietary patterns are becoming increasingly popular because of a variety of reported health benefits to overall health and cardiovascular risk and disease in particular (3,4).

However, the concept of “plant-based diet” varies widely in definition, ranging from exclusion of all animal products (3) to only having “high factor loadings for vegetables, fruits, fruit juice, cereal, beans” while including “fish, poultry, and yogurt” (5).

Some plant-based diets reduce or eliminate intake of highly refined plant foods such as white flours, sugars, and oils. Other publications categorize plant-based diets by actual content, (e.g., semi-vegetarian [typical American diet with smaller portions or lower frequency of animal products], pescovegetarian [seafood with or without eggs and dairy], lacto-ovo-vegetarian [eggs and dairy], and vegan [no animal products] diets). Randomized controlled trials and epidemiological studies indicate that plant-based diets, particularly vegan diets, are associated with significant improvement in CVD events, lowering risk factors such as diabetes and hypertension (1) and decreasing symptomatic and scintigraphic myocardial ischemia (6) and coronary artery disease (7); thus,

revolutionizing our understanding about heart-healthy food patterns and the biological mechanisms linking dietary factors and CVD (1,8).

These data are strengthened by several recent landmark publications, including Song et al.’s recent large prospective cohort study of U.S. nurses and other health care professionals, describing the association between animal protein intake and cardiovascular, cancer, and all-cause mortality (9). In this large cohort study, higher intake of animal protein (including processed red meat, unprocessed red meat, dairy, poultry, and eggs) was positively associated with mortality, whereas the inverse was true for high intake of plant protein. In another recent meta-analysis, Kwok et al. (10) found similar results with vegetarians experiencing a 29% lower risk of coronary heart disease (CHD) mortality relative to nonvegetarians. These findings suggest the importance of protein source and support recommendations to increase plant protein intake, which in turn calls for education of physicians, patients, and the public about the largely unrecognized protein content of plants (e.g., peanuts and beef having the same protein content, 26 g per 100 g).

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Some of these studies have defined plant-based diets dichotomously as being vegetarian or not and treat all plant foods equally—but are all plant-based diets equally beneficial for health? Further, if a predominantly plant-based diet is good, is a vegan one even better? Additionally, are the advantages of plant-based diets an all-or-nothing phenomenon? Against this background, Satija et al. (11) investigate the associations between plant-based diet indices and CHD incidence in this issue of the *Journal*. In a prospective series of 209,298 participants, the authors examined the inverse relationship between plant dietary index (PDI) and incidence of CHD,

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bifurcating a healthy PDI from an unhealthy one. They used food intake surveys to quantify dietary patterns into 3 graded plant-based diet indices—overall (PDI), healthful (hPDI), and unhealthy (uPDI)—and analyzed how gradual reductions in animal protein intake along with increases in plant food intake affect cardiovascular health. Higher adherence to PDI was independently inversely associated with CHD (hazard ratio [HR] comparing extreme deciles: 0.92; 95% confidence interval [CI]: 0.83 to 1.01; p trend = 0.003), with a stronger inverse association for hPDI (HR: 0.75; 95% CI: 0.68 to 0.83; p trend <0.001). Conversely, a positive association was found for uPDI (HR: 1.32; 95% CI: 1.20 to 1.46; p trend <0.001).

This study adds to the evidence of gradations of adherence to an overall PDI with CHD incidence, such that one could propose a risk-based approach to PDI prescription: secondary prevention after cardiovascular events and patients at high risk having a stronger recommendation for a strictly hPDI. They cannot address the benefits of a purely plant-based diet (vegan) because this was a very small population in their study.

Substantial evidence indicates that a predominantly plant-based diet is associated with improved cardiovascular risk factors, reduced incidence, and progression of CHD. Not all plant-based foods are equally healthy; rather, plant-based diets including whole grains as the main form of carbohydrate, unsaturated fats as the predominate form of dietary fat, an abundance of fruit and vegetables, and adequate n-3 fatty acids can play an important role in preventing CVD. Such diets, which have many other health benefits including the prevention of several chronic diseases, deserve more emphasis in dietary recommendations.

Getting to the “meat” of the issue, does this mean that healthful eating is an all-or-none phenomenon?

Public health recommendations on exercise, for instance, now report that some activity is better than none when it comes to improving health and well-being. Reaching the weekly recommended goal of physical activity may initially seem unattainable to many, and thus discourage them from any exercise. Similarly, this “all-or-none” mindset is seen with eating habits. Just as physical activity is a continuum, perhaps an emphasis on starting with smaller dietary tweaks rather than major changes would be more encouraging and sustainable for those finding it difficult to make a complete and precipitous change in dietary habits. A simple approach was recently coined by Michael Pollan, “Eat food. Not too much. Mostly plants” (12).

Potential implications of healthier diet include a reduction in disease-related expenditures, such as drug costs and hospitalizations for stroke, heart failure, chronic kidney disease, and myocardial infarction associated with systemic hypertension, which is present in 58% of Medicare beneficiaries (13). If, for example, widespread adoption of plant-based nutrition reduced the incidence of hypertension to 25% of the current rate (1), this could result in savings of nearly 30% of the Medicare budget (14).

What, then, does hPDI really mean? It means both a challenge and an opportunity for cardiology. Until recently, as a group, cardiologists have not delved deeply into nutrition, treating CVD’s downstream effects rather than obliterating its roots, leaving primary and secondary prevention opportunities on the table. It is time that we educate ourselves on dietary patterns, risk, and outcomes, and focus more on “turning off the faucet” instead of “mopping up the floor” (15).

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