Diet and Type-2 Diabetes

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According to the Centers for Disease Control (CDC), 13% of U.S. adults have diabetes. Incidence increases with age and reaches 26.8% for Americans aged 65 years or older.[1] Almost all healthcare providers agree that diet is important for managing diabetes and for reducing the risk of co-morbidities which include cardiovascular disease and related events. Unfortunately, research shows that a minority of diabetics achieve glycemic control with diet.

A recent study might provide some inspiration for type-2 diabetics to pay more attention to diet. Participants in this nonrandomized crossover study were adults who had type 2 diabetes, required insulin, had a BMI of at least 27, and A1C levels between 6.5 and 9.5.

Fifteen participants were enrolled in a 4-week trial with sequential one-week phases:
Baseline, Dash 1, WFPB and a second week of the DASH diet
The diets were all ad libitum (subjects could eat as much as they wanted) and meals were provided.

First, a description of the two intervention diets:
Dietary Approaches to Stop Hypertension (DASH) does not require the elimination of any food but rather emphasizes consumption of more fruit, vegetables, whole grains, and low-fat dairy, while intake of saturated fat and sugar are reduced.

A whole foods plant-based diet (WFPB) emphasizes beans, whole grains, and fruits and vegetables; and minimizes or excludes animal foods, added fats, and added sugars.

Both diets have been shown in previous studies to lower blood pressure,[2] [3] plasma cholesterol,[4] [5] and blood sugar.[6] [7] Long-term adherence to a WFPB diet has been shown to result in atherosclerotic regression, reduction in angina and reduced risk of cardiac events in people who have been diagnosed with severe coronary artery disease.[8] [9]

Results:
Twelve of the fifteen subjects completed the study. One subject dropped out due to an unexpected surgery; one due to a car accident; and one subject started a new job and could not continue the weekly assessments.

Total calories were lower during all three intervention phases as compared to the baseline diet. By the end of the DASH 1 phase, total daily insulin requirements were 24% lower than baseline. By the end of the WFPB phase, total daily insulin

requirements were 39% lower than baseline. When the DASH diet was resumed, insulin requirements increased 15% from the end of the WFPB week.

Average daily blood sugar was 22–24% lower with both intervention diets as compared to baseline, but the WFPB diet resulted in the lowest fasting blood sugar.

Insulin resistance decreased by 30.0% during DASH 1 and 49% during the WFPB diet. Insulin resistance during DASH 2 remained 28% lower than baseline. Insulin sensitivity was 17% higher at the end of DASH 1, 38% higher at the end of the WFPB diet, and then decreased almost to baseline by the end of DASH 2.

Weight decreased during all three phases, with a 3% lower weight at the end of the third week compared to baseline. Total, HDL, and LDL cholesterol were all lowest at the end of the WFPB week and total and LDL cholesterol significantly increased upon returning to the DASH diet.[10]

Conclusions:
Both DASH and WFPB diets, without calorie or portion restriction, result in significant and rapid reductions in insulin requirements for insulin-dependent type-2 diabetics. Subjects consuming these diets also experienced decreased total and LDL cholesterol; and lower leptin, weight, and c-reactive protein. It is not possible to completely isolate the effect of each diet since there were carryover effects from week to week. But a pattern was observed: the benefits from the DASH diet were significantly greater when subjects switched to a WFPB diet. When the DASH diet was resumed, the benefits began regressing back toward baseline.

Limitations:
This was a small study, but one of the advantages of small studies is that researchers often can better control variables. For example, in this study meals were provided, which may not have been practical or affordable with more participants.

The breadth of the effect is a counter for the small study size. It is much easier to find effects in larger studies with hundreds of subjects, but often these differences are statistically significant but clinically meaningless. In this case, the effect was not just statistically significant, but clinically very meaningful. The short follow-up time is also a limitation, but the results were significant and immediate, and such results might incentivize people to continue to adhere to better diets in order to improve their health.

Bottom line: More plant food intake leads to better health and the more plant food consumed, the better the outcomes.

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