

Genotype Might Help in Choosing Weight-Loss Diet

BY ROBERT FINN

SAN FRANCISCO — Genotypes may identify women who are likely to lose weight on a low-carbohydrate diet and those who are likely to do better on a low-fat diet, based on data from 133 participants in the A TO Z Weight Loss Study.

The women who had one pattern of single nucleotide polymorphisms (SNPs) lost about five times as much weight on the Atkins diet, compared with the women who did not have that pattern. Similarly, the women who had a different SNP genotype lost about five times as much weight on the Ornish diet as did the women who did not have that pattern, Mindy Dopler Nelson, Ph.D., of Stanford (Calif.) University, reported at a conference sponsored by the American Heart Association.

In the original A TO Z study, 311 women were randomized to one of four popular weight-loss diets. Ranging on a continuum from low carbohydrate to low fat, they were the Atkins diet, the Zone diet, the LEARN diet, and the Ornish diet. On average, the women lost weight on all four of the diets; the only significant difference was that they tended to lose somewhat more weight on the Atkins diet than on the Ornish diet (JAMA 2007;297:969-77).

“Within each of the diet groups, there are women who had lost over 15 kg ... as well as people who gained 5 kg,” Dr. Nelson explained in an interview. “When you look at the averages you don’t see the differences, but when you look at each individual participant you see some variability.”

Some time after the conclusion of the A TO Z study, a company called Interleukin Genetics approached Stanford researchers and suggested that they use the company’s proprietary SNP test to assess responders and nonresponders to particular diets. In previous studies, the company had found polymorphisms in three genes—those coding for fatty acid binding protein, PPAR-gamma, and the beta-2 adrenergic receptor—that appeared to predict a person’s responses to various weight-loss diets.

Among the 133 women from the original study who agreed to provide DNA samples from swabs of the inner cheek, 31 had been in the Atkins group, 32 in the Zone group, 34 in the LEARN group, and 36 in the Ornish group. There were no statistically significant baseline differences among the four groups in measures such as body mass index and blood pressure, or in levels of cholesterol, insulin, and glucose, Dr. Nelson reported.

The company’s test showed that 79 of the women had genotypes that were designated as low-carb appropriate, and 54 had genotypes that were designated as

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Major Finding: Women who were randomized to a low-fat or a low-carbohydrate diet considered appropriate (based on a pattern of three single nucleotide polymorphisms) lost about 6 kg vs. about 1-1.5 kg among women randomized to diets judged as inappropriate.

Data Source: Data from 133 women who participated in the A TO Z Weight Loss Study.

Disclosures: Research support was provided by Interleukin Genetics. Dr. Nelson had no financial conflicts.

low-fat appropriate.

The interaction between genotype and diet was statistically significant, with striking differences among the women in the lowest-carb and lowest-fat diets. Among the women on the Atkins diet, those who were designated as low-carb appropriate lost an average of just under 6 kg during 12 months, while those who were designated as low-carb inappropriate lost about 1 kg.

Among the women on the Ornish diet, those who were designated as low-fat appropriate lost an average of more than 6 kg during 12 months, while those who were designated as low-fat inappropriate lost an average of about 1.5 kg.

Thus, in each of those groups, women who had been randomized to what was designated as the appropriate diet lost about five times as much weight as those who had been randomized to the apparently inappropriate diet, Dr. Nelson reported.

Among women on the Zone or LEARN diets, which involve intermediate levels of carbohydrates and fat, women who had low-carb and low-fat genotypes did not have statistically significant differences in weight loss.

Dr. Nelson acknowledged that the trial was relatively small, and that the findings need to be confirmed in a larger trial in a more heterogeneous population. Nevertheless, the results do provide some guidance to people who are trying to lose weight, she said.

“I would suggest that if somebody is discouraged by the weight loss that they’re having on whatever particular diet they’re following, they may just want to consider changing the distribution of their macronutrients,” Dr. Nelson said. “So maybe if you’re doing a higher-carbohydrate diet and you’re not seeing your weight loss, give up some of the more processed carbohydrates, keep the healthier ones in there, and see if shifting to the lower-carbohydrate diet will help with weight loss.”

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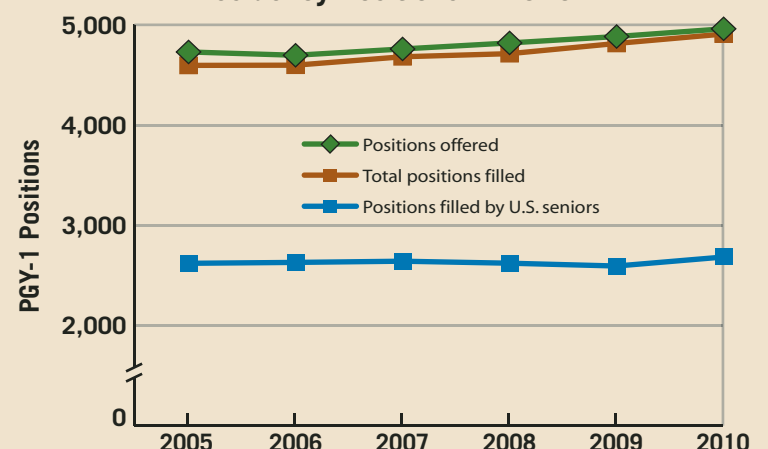


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