

## Beneficial Effects of a Dietary Approaches to Stop Hypertension Eating Plan on Features of the Metabolic Syndrome

Response to Azdbakht et al.

We read with interest the article by Azdbakht et al. (1), showing that a nutritional approach based on a Dietary Approaches to Stop Hypertension (DASH) diet reduced the prevalence of the syndrome by about one-third. This study adds to the mounting evidence that fighting metabolic and cardiovascular disease with diet is possible (2). As the DASH diet is very similar to the Mediterranean diet, these results confirm in the short term (6 months) previous findings obtained over a longer period of time (24 months) (3). The authors did a fine job obtaining such a significant weight loss (13 kg on the average in the weight-control arm and 15 kg on the average in the DASH arm), as the change in body weight expected with a program of intensive lifestyle changes may be less impressive ( $-6.7 \pm 7.9$  kg at 12 months) (3). Perhaps one would have expected a larger resolution of features of the metabolic syndrome in the weight-control arm (19% resolution). To give more strength to their work, the authors should also comment on some inconsistency in Table 2. Fasting blood glucose (FBG) was only 3 mg/dl at baseline in the control group (obviously a mistake); however, it seems difficult to imagine that the DASH diet increased FBG by 15 and 8 mg/dl on the average at 6 months (men and women), as in the RESULTS section the opposite is stated (obviously a mistake). As the table seems imprecise (the reason why values for men are reported as median and for women as mean is unclear), the authors should also check the huge SD of basal FBG. Lastly, there is an important thing missing: the starting and posttreatment quantity of energy consumed by participants is not reported, leaving the reader to assume that all subjects in both arms ate a diet with 500 kcal less than their caloric needs, without any check. The findings of Azdbakht et al. (1) confirm that diet is at least equivalent to drugs in reducing the prevalence of the metabolic syndrome (3–5).

KATHERINE ESPOSITO, MD, PHD  
DARIO GIUGLIANO, MD, PHD

From the Division of Metabolic Diseases, University of Naples SUN, Naples, Italy.

Address correspondence to Dario Giugliano, MD, PhD, University of Naples SUN, Piazza L. Miraglia, 80138 Naples, Italy. E-mail: dario.giugliano@unina2.it.

© 2006 by the American Diabetes Association.

### References

1. Azadbakht L, Mirmiran P, Esmailzadeh A, Azizi T, Azizi F: Beneficial effects of a Dietary Approaches to Stop Hypertension eating plan on features of the metabolic syndrome. *Diabetes Care* 28:2823–2831, 2005
2. Esposito K, Giugliano D: Diet and inflammation: a link to metabolic and cardiovascular diseases. *Eur Heart J* 27:15–20, 2006
3. Esposito K, Marfella R, Ciotola M, Di Palo C, Giugliano F, Giugliano G, D'Armineto M, D'Andrea F, Giugliano D: Effect of a Mediterranean-style diet on endothelial dysfunction and markers of vascular inflammation in the metabolic syndrome: a randomized trial. *JAMA* 292:1440–1446, 2004
4. Wadden TA, Berkowitz RI, Womble LG, Sarwer DB, Phelan S, Cato RK, Hesson LA, Osei SY, Kaplan R, Stunkard AJ: Randomized trial of lifestyle modification and pharmacotherapy for obesity. *N Engl J Med* 353:2111–2120, 2005
5. Orchard TJ, Tempres M, Goldberg R, Haffner S, Ratner R, Marcovina S, Fowler S: The effect of metformin and intensive lifestyle intervention on the metabolic syndrome: the Diabetes Prevention Program randomized trial. *Ann Intern Med* 142:611–619, 2005

## Beneficial Effects of a Dietary Approaches to Stop Hypertension Eating Plan on Features of the Metabolic Syndrome

Response to Esposito and Giugliano

We thank Esposito and Giugliano (1) for their attention to our study, in which we showed the beneficial effects of a Dietary Approaches to Stop Hypertension (DASH) eating pattern on components of the metabolic syn-

drome (2). DASH diet is similar to the Mediterranean diet; both have high levels of fiber and isoflavones and a large number of low-glycemic index foods such as vegetables and whole grains (3,4). We agree with Esposito and Giugliano that in the short term, our study (2) confirms the results reported by them previously (3). However, we discussed differences between DASH and Mediterranean diet in the CONCLUSIONS section of our study (2).

We reported a 13-kg weight reduction in the weight-reducing diet and a 15-kg reduction in the DASH diet (2). As it had been mentioned in the RESEARCH DESIGN AND METHODS section of our study, subjects on both weight-reducing diet and DASH diet ate 500 kcal less than their caloric needs. Despite intensive lifestyle changes in the study by Esposito et al. (3), patients did not consume a diet with 500 calories less than their needs. However, the patients reduced dietary caloric intake (if needed) by 170 kcal in the intervention group.

Regarding Esposito and Giugliano's expectation about the larger resolution of features of the metabolic syndrome in the weight-reducing diet, it should be kept in mind that the metabolic syndrome is a constellation of risk factors (high blood pressure, lipid abnormalities, and elevated blood glucose). Although the amount of weight reduction in the weight-reducing diet and DASH group in our study was not significantly different, the decrement of the prevalence of the metabolic syndrome in the DASH and the weight-reducing group was significantly different ( $-35$  vs  $-19\%$ ,  $P < 0.05$ ). Therefore, the nutrient content of the DASH diet may be important. The DASH diet has larger amounts of dairy and calcium that are inversely related to the metabolic syndrome and its components (5). Also, its sodium content is restricted, which could regulate blood pressure. Some studies (6) also have shown no significant effect of weight-reducing diet on some metabolic risks.

Unfortunately, Table 2 in our study (2) has some inconsistencies due to a typing error in the fasting blood glucose (FBG) values in women (the last row). The baseline FBG in the control group was actually 93 mg/dl and in the DASH group 91 and 86 mg/dl after 3 and 6 months, respectively. As it has been stated in Fig. 2, DASH diet decreased FBG by 15 and 8 mg/dl in men and women, respectively. By correcting the mentioned typing error, there would be a logical SD in FBG.

