

# Reduce Carbs or Lose Weight to Lower Cholesterol

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SAN FRANCISCO — Reducing dietary carbohydrates can improve atherogenic dyslipidemia, even in the absence of weight loss, Dr. Ronald M. Krauss said at a meeting on diabetes and endocrinology sponsored by the University of California, San Francisco.

Weight loss also improves dyslipidemia, mainly in people who have not already limited carbohydrates. For patients already restricting carbohydrates, weight loss offers little additional benefit to their lipid profiles, said Dr. Krauss, director of ath-



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DR. KRAUSS

erosclerosis research at Children's Hospital Oakland (Calif.) Research Institute.

To take the reduced-carbohydrate path, focus on avoiding high-glycemic starches and fructose, he advised.

He and his associates randomized 178 otherwise healthy overweight or obese men to one of four diets: one based on standard dietary recommendations (made up of 54% carbohydrates, 30% fat, and 16% protein), a diet with moderate carbohydrate reduction (to 39%), or one of two low (26%)-carbohydrate diets. To keep calorie levels the same initially, the researchers increased protein intake to 29% of the reduced-carbohydrate diet, and in the lowest carbohydrate diets increased either saturated or monounsaturated fat intake.

After 3 weeks ("which is enough to stabilize lipids with no weight change," he said), they found a linear relationship between greater carbohydrate restriction and a change in the type of LDL cholesterol (Am. J. Clin. Nutr. 2006;83:1025-31). Carbohydrate restriction converted men from phenotype B individuals (who had dense, small-diameter LDL particles that confer higher atherogenic risk) to phenotype A (with medium-to-large-diameter LDL that's less risky).

Investigators then restricted calories, and patients in all groups lost similar amounts of weight. The type of diet "didn't make any difference as long as they learned to eat less," he said. Lipid levels improved with weight loss, but less so in the low-carbohydrate groups that already had shown improvements.

The only significant reductions in LDL levels were seen with the low-carbohydrate, low-saturated-fat diet. "This is certainly the most effective diet in terms of LDL lowering that we've seen just by manipulating fat," he added.

The reductions in small LDL particles from lowering carbohydrate intake were independent of saturated fat intake. Higher saturated fat intake did not attenuate the lipid benefits of lowering carbohydrates. Saturated fat intake "doesn't make

it any worse. That's provocative, but that's what we found," he said.

Previous studies of the lipid effects of low-carbohydrate diets didn't control for the effects of weight loss.

"You can get there either way. If you want to get the optimal result, you can either lose weight or you can drop carbohydrates. If you drop carbohydrates, it may not be as critical how much weight you lose," Dr. Krauss said.

Other studies are attempting to replicate

the findings. A recent study randomized dyslipidemic patients to one of four diets for 1 year: the severely low-carbohydrate Atkins diet, the more moderately carbohydrate-restricted Zone diet, a diet based on standard dietary recommendations, or the low-fat, high-carbohydrate Ornish diet.

The four groups had similar success in losing weight. Patients on the Atkins diet had somewhat better changes in body mass index, compared with the other groups, and profoundly better effects on

lipid profiles, notably increases in HDL cholesterol and decreases in triglyceride levels (JAMA 2007;297:969-77).

Changes in the different types of LDL cholesterol were not measured in this cohort, but "there's just no doubt this would correspond to the same sort of changes we had seen," Dr. Krauss said.

The most effective diet probably will be one that patients are able to maintain, he added. "In the end, that will be the biggest test of whether or not this works." ■

## DIOVAN HCT: Power to help get to BP goal



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with DIOVAN HCT 320/25 mg in Stage 1 hypertension<sup>1,2</sup>

JNC 7 goal: BP <140/90 mm Hg.

In this double-blind, placebo-controlled study, hypertensive patients (N=1,346) were randomized to one of eight treatment arms: HCTZ 12.5 mg once daily, HCTZ 25 mg once daily, valsartan 160 mg once daily, valsartan 320 mg once daily, DIOVAN HCT 160/12.5 mg once daily, DIOVAN HCT 320/12.5 mg once daily, DIOVAN HCT 320/25 mg once daily, or placebo. Patients randomized to DIOVAN HCT 320/12.5 mg once daily or DIOVAN HCT 320/25 mg once daily received DIOVAN HCT 160/12.5 mg once daily during the first week of treatment, and were then titrated to their respective final doses. Patients in the other treatment arms remained on their initial doses for the entire treatment period. Patients were treated for a total of 8 weeks. Results shown are from a subgroup analysis in patients with Stage 1 hypertension. Goal rates are at end point (8 weeks). Mean baseline BP was 146/97 mm Hg for the DIOVAN HCT 320/25-mg group (n=80) and 144/97 mm Hg for the placebo group (n=89).

Goal rate with placebo was 39%.

### Important Considerations

**USE IN PREGNANCY:** When used in pregnancy, drugs that act directly on the renin-angiotensin system can cause injury and even death to the developing fetus. When pregnancy is detected, valsartan or DIOVAN HCT should be discontinued as soon as possible. See **WARNINGS** in brief summary of Prescribing Information on adjacent page.

Valsartan and DIOVAN HCT are contraindicated in patients who are hypersensitive to any component of these products. Because of the thiazide component, DIOVAN HCT is contraindicated in patients with anuria or hypersensitivity to sulfonamide-derived drugs.

Volume- and/or salt-depletion should be corrected in patients prior to administering valsartan or DIOVAN HCT or symptomatic hypotension may occur.

Care should be exercised with dosing of valsartan in patients with severe renal impairment. As a consequence of inhibiting the renin-angiotensin system, changes in renal function may be observed in susceptible individuals (eg, patients with renal artery stenosis or severe heart failure).

**Important considerations due to the hydrochlorothiazide component:** Thiazide diuretics should be used with caution in patients with impaired hepatic function or progressive liver disease. Lithium generally should not be given with thiazides. Thiazides have been reported to cause exacerbation or activation of systemic lupus erythematosus. Patients taking DIOVAN HCT should be observed for clinical signs of fluid or electrolyte imbalance.

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**Valsartan or DIOVAN HCT are indicated for the treatment of hypertension.**

**DIOVAN HCT is for patients who need even more than valsartan or HCTZ alone and is not indicated for initial therapy.**

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