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Intermittent, Low-Carbohydrate Diets More Successful Than Standard Dieting, Present Possible Intervention for Breast Cancer Prevention

- Intermittent, low-carbohydrate diets were superior in lowering blood levels of insulin, which can lead to cancer.
- Low-carbohydrate diet two days per week resulted in greater weight loss than standard daily dieting.

SAN ANTONIO — An intermittent, low-carbohydrate diet was superior to a standard, daily calorie-restricted diet for reducing weight and lowering blood levels of insulin, a cancer-promoting hormone, according to recent findings.

Researchers at Genesis Prevention Center at University Hospital in South Manchester, England, found that restricting carbohydrates two days per week may be a better dietary approach than a standard, daily calorie-restricted diet for preventing breast cancer and other diseases, but they said further study is needed.

“Weight loss and reduced insulin levels are required for breast cancer prevention, but [these levels] are difficult to achieve and maintain with conventional dietary approaches,” said Michelle Harvie, Ph.D., SRD, a research dietician at the Genesis Prevention Center, who presented the findings at the 2011 CTRC-AACR San Antonio Breast Cancer Symposium, held Dec. 6-10, 2011.

Harvie and her colleagues compared three diets during four months for effects on weight loss and blood markers of breast cancer risk among 115 women with a family history of breast cancer. They randomly assigned patients to one of the following diets: a calorie-restricted, low-carbohydrate diet for two days per week; an “ad lib” low-carbohydrate diet in which patients were permitted to eat unlimited protein and healthy fats, such as lean meats, olives and nuts, also for two days per week; and a standard, calorie-restricted daily Mediterranean diet for seven days per week.

Data revealed that both intermittent, low-carbohydrate diets were superior to the standard, daily Mediterranean diet in reducing weight, body fat and insulin resistance. Mean reduction in weight and body fat was roughly 4 kilograms (about 9 pounds) with the intermittent approaches compared with 2.4 kilograms (about 5 pounds) with the standard dietary approach. Insulin resistance reduced by 22 percent with the restricted low-carbohydrate diet and by 14 percent with the “ad lib” low-carbohydrate diet compared with 4 percent with the standard Mediterranean diet.

“It is interesting that the diet that only restricts carbohydrates but allows protein and fats is as effective as the calorie-restricted, low-carbohydrate diet,” Harvie said.

She and her colleagues plan to further study carbohydrate intake and breast cancer. This study was funded by the Genesis Breast Cancer Prevention Appeal (www.genesisuk.org).

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The mission of the CTRC-AACR San Antonio Breast Cancer Symposium is to produce a unique and comprehensive scientific meeting that encompasses the full spectrum of breast cancer research, facilitating the rapid translation of new knowledge into better care for patients with breast cancer. The Cancer Therapy & Research Center (CTRC) at The University of Texas Health Science Center at San Antonio, the American Association for Cancer Research (AACR) and Baylor College of Medicine are joint sponsors of the San Antonio Breast Cancer Symposium. This collaboration utilizes the clinical strengths of the CTRC and Baylor and the AACR’s scientific prestige in basic, translational and clinical cancer research to expedite the delivery of the latest scientific advances to the clinic. The 34th annual symposium is expected to draw nearly 8,000 participants from more than 90 countries.

Presenter: Michelle Harvie, Ph.D., SRD

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Title: Intermittent Dietary Carbohydrate Restriction Enables Weight Loss and Reduces Breast Cancer Risk Biomarkers.

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Background: Energy restriction is a potential strategy for breast cancer prevention but is difficult to achieve and maintain. We found that intermittent energy restriction (2 days strict dieting week) is comparable to the standard approach of moderate daily restriction for weight loss and marginally better for improving insulin sensitivity, but no easier to follow¹. In this follow on study we wished to test whether 2 novel intermittent low carbohydrate/ low energy diets were feasible and easier to follow than a standard daily energy restriction.

Design: Randomised comparison of 3 dietary types over 4 months in 115 overweight or obese (mean body mass index 31.0 [\pm]5.3 SD) kg/m²) women at increased risk of breast cancer (lifetime risk > 1 in 6).

Diets:

1. A restricted low carbohydrate diet (RLCD): 650 kcal and <50g carbohydrate / day for 2 days per week
2. Ad lib low carbohydrate diet (ALCD): <50g / day for 2 days per week with other food types (e.g. protein) ad lib
3. A standard daily restricted Mediterranean diet (DRMD): ~1500kcal / day for 7 days per week

Methods: Weight, anthropometrics, blood markers for breast cancer; insulin resistance, oxidative stress markers, leptin, adiponectin, lipids, inflammatory markers IGF-1 were assessed at baseline, 1, 3 and 4 months.

Results: 88/114 completed the study (77%, drop outs 6 RLCD, 8 ALCD 12 DRMD). Last observation carried forward analyses show both intermittent low carbohydrate diets were superior to standard daily restriction for reducing weight and body fat: mean (95% confidence interval [CI]) change in body fat for RLCD was -4.3 (-5.6 to -3.0) kg, for ALCD -4.1 (-5.2 to -3.1) kg vs. -2.4 (-3.4 to -1.2) kg for DRMD (P value for difference between groups = 0.02). The intermittent groups had greater improvement in insulin resistance: mean (95% CI) change for RLCD was -22 (-35 to -11) %, ALCD -14 (-27 to -5%) % vs. -4 (-16 to 9) % for DRMD (P = 0.02). Other biomarkers are being assayed currently.

Conclusion: Greater weight loss, fewer drop outs and greater reductions in insulin resistance with the novel intermittent low carbohydrate diets indicate that these are alternative approaches for energy restriction for potentially reducing risk of breast cancer and other diseases.

Reference:

¹Harvie MN, Pegington M, Mattson MP, Frystyk J, Dillon B, Evans G et al. The effects of intermittent or continuous energy restriction on weight loss and metabolic disease risk markers: a randomized trial in young overweight women. *Int.J Obes (Lond)* 35; 714-27, 2011.

This study is funded by the Genesis Breast Cancer Prevention Appeal: www.genesisuk.org