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Starch Intake May Influence Risk for Breast Cancer Recurrence

- Increased carbohydrate intake was associated with a higher rate of breast cancer recurrence.
- Changes in starch intake comprised 48 percent of changes in carbohydrate intake.
- Dietary modifications targeting starch intake warrant further research.

SAN ANTONIO — Researchers have linked increased starch intake to a greater risk for breast cancer recurrence, according to results presented at the 2011 CTRC-AACR San Antonio Breast Cancer Symposium, held Dec. 6-10, 2011.

“The results show that it’s not just overall carbohydrates, but particularly starch,” said Jennifer A. Emond, M.S., a public health doctoral student at the University of California, San Diego. “Women who increased their starch intake over one year were at a much likelier risk for recurring.”

Researchers conducted a subset analysis of 2,651 women who participated in the Women’s Healthy Eating and Living (WHEL) Dietary Intervention Trial, a plant-based intervention trial that enrolled about 3,088 survivors of breast cancer. WHEL researchers studied breast cancer recurrence and followed the participants for an average of seven years.

The subset analysis involved an examination of how changes in carbohydrate intake influenced breast cancer recurrence. “The WHEL dietary trial, even though it focused on fruits and vegetables, fiber and fat, didn’t really have a specific carbohydrate goal,” Emond said.

She and her colleagues obtained carbohydrate intake information from multiple 24-hour dietary recalls at baseline and at one year. In an annual phone interview, participants reported everything they had eaten during the last 24 hours.

At baseline, carbohydrate intake was 233 grams per day. Results showed that women whose cancer recurred had a mean increase in carbohydrate intake of 2.3 grams per day during the first year, while women whose cancer did not recur reported a mean decrease of 2.7 grams per day during the first year.

Starches were particularly important, Emond said. Changes in starch intake accounted for 48 percent of the change in carbohydrate intake. Mean change in starch intake during the first year was -4.1 grams per day among women whose cancer recurred vs. -8.7 grams per day among women whose cancer did not recur.

When change in starch intake during one year was grouped into quartiles of change, the rate of an additional breast cancer event was 9.7 percent among women who decreased their starch intake the most during one year, compared with an event rate of 14.2 percent among women who increased their starch intake the most during one year.

The change in starch intake was “independent of dietary changes that happened in the intervention arm,” Emond said. “It is independent of more global changes in diet quality.”

After stratifying patients by tumor grade, Emond and colleagues found that the increased risk was limited to women with lower-grade tumors.

These results indicate a need for more research on dietary recommendations that consider limited starch intake among women with breast cancer.

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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: Jennifer A. Emond, M.S.

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Title: Change in Carbohydrate Intake and Breast Cancer Prognosis.

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Body: Breast tumors over express insulin-like-growth-factor receptors (IGF-IR), and levels of expression may be inversely related to tumor grade. Dietary factors, particularly carbohydrate intake, may stimulate activation of IGF-1R and affect prognosis.

Methods: Data are from N=2,651 women in the Women's Healthy Eating and Living (WHEL) Dietary Intervention trial, a plant based intervention trial that did not have a carbohydrate goal. All women were diagnosed with breast cancer within the previous 4 years. Carbohydrate dietary intake data were extracted from multiple 24-hour dietary recalls at study entry and one year, and were compared by recurrence status. Time to recurrence was modeled on year-one change in carbohydrate intake adjusted for baseline intake, menopausal status, and disease, treatment, and study characteristics.

Results: Baseline carbohydrate intake was 233 g/day. Women who recurred had a mean increase in carbohydrate intake over the first year, compared to those who did not recur (2.3 vs. -2.7 g/day; p=0.188). Change in starch intakes accounted for 48% of the change in carbohydrate intake (R-squared: 48%; p<0.001). Baseline starch intake did not differ by recurrence status (95.8 g/day; p=0.219). Mean year-one change in starch intake was -4.1 g/day among women who recurred vs. -8.7 g/day among women who did not recur (p=0.015). Year-one change in starch intake was independent of the study intervention (p=0.326). In the adjusted model, a 5-g/day increase in starch related to a 3% increased risk of recurrence (HR=1.03; 95% CI 1.01 – 1.06; p=0.017). The increased risk was limited to women diagnosed with low grade tumors (Table 1).

Table 1: Adjusted risk of recurrence by year-one change in starch intake.

	Overall	Stratified By Primary Tumor Grade	
Year-one change, 5g/day		Well/Moderate Differentiation	Poor Differentiation
HR (95% CI); p-value	1.03 (1.01-1.06); p=0.017	1.05 (1.01-1.09); p=0.007	1.00 (0.96–1.04); p=0.981

Discussion: Dietary modifications targeting starch intake warrant further investigation as a preventive measure against breast cancer recurrence.