THE ROLE OF A LOW-FAT DIETARY INTERVENTION ON INTAKE OF DIETARY ADVANCED GLYCATION END PRODUCTS IN POSTMENOPAUSAL WOMEN

BACKGROUND

Advanced glycation end-products (AGEs) are compounds produced in the body during the metabolism of protein, lipids or nucleic acids

AGEs have been implicated in breast cancer risk and prognosis

In the Women's Health Initiative (WHI) Dietary Modification (DM) randomized trial, the low-fat dietary intervention significantly reduced breast cancer mortality (P = 0.02) over 20 years of follow up

Dietary AGEs (dAGEs) are associated with westernized diets and adversely impact breast cancer prognosis

AIM

To examine whether a low-fat dietary pattern influenced intake of dAGEs

METHODS

48,835 postmenopausal women, 50-79 y, randomized to a low-fat dietary intervention (n = 19,541) vs usual diet comparison (n=29,294)

FFQ collected at baseline, year 1, & yearly thereafter from a rotating subgroup

Estimate dAGE scores (kilo Units/100 kilocalories [kU/1000 kcal]) calculated using a commonly referenced database

Multivariate regressions with repeated measures for dAGEs, by randomization group and follow-up duration (baseline, years 1, 2-4 and 5-7).

Key Characteristics

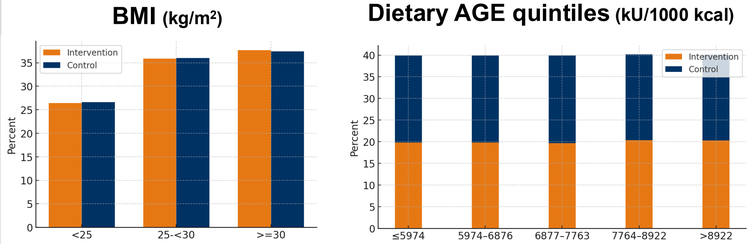


Figure 1. Dietary AGE least squares means by trial arm and study visit year at follow up

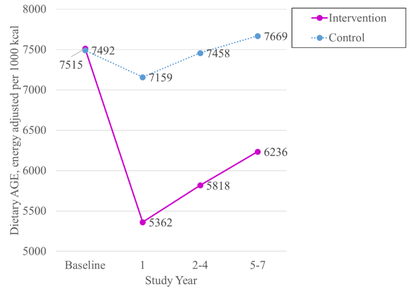


Table 1. Multivariate Regression with Repeated Measures

Main Effects	F-statistic	p-value
Between subjects (DM trial arm)	2312.17	<0.0001
Within subjects (visit)	1845.50	<0.0001
Interaction (DM trial arm * visit)	1168.89	<0.0001

Models adjusted for age, race, ethnicity, education, family income, unopposed estrogen use, estrogen plus progestogen use, smoking history, BMI, moderate to vigorous physical activity, alcohol intake, dietary energy intake, fruit and vegetable consumption, whole grain consumption, red and processed meat intake, and total Healthy Eating Index (HEI) scores using 2015 scoring.

RESULTS

Key Characteristics

- Age: 62.3 years (Intervention) vs. 62.4 (Control)
- Race: >85% White in both arms
- BMI: similar distribution across arms
- Diet: Comparable energy intake and HEI scores
- Baseline mean dAGE scores similar between arms:

intervention: 7,542 kU/1000 kcal (SD=912) vs. comparison: 7,514 kU/1000 kcal (SD=917)

Multivariate analysis

- Largest difference in dAGE was observed after 1-year follow-up:

intervention: 5,362 kU/1000 kcal vs. comparison: 7,159 kU/1000 kcal

- Persistently lower dAGE levels in the intervention, with some attenuation of the difference:
  - *Visit years 2-4,* intervention: 5,818 kU/1000 kcal vs. comparison: 7,458 kU/1000 kcal, P <0.0001
  - *Visit years 5-7,* intervention: 6,236 kU/1000 kcal vs. comparison: 7,669 kU/1000 kcal, P <0.0001

CONCLUSIONS

Among postmenopausal women, a low-fat dietary intervention substantially reduced dAGE intake

Future studies will explore whether reduced dAGE intake moderated the favorable breast cancer outcomes previously reported in the WHI DM trial.

Contact

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Margaret S. Pichardo, MD, PhD, MPH[1], Rebecca P. Hunt, MS.[2], Lindsay L. Peterson, MD, MSCR[3], Kathy Pan, MD[4], Mace Coday, PhD[5], Su Yon Jung PhD, MPH[6], Linda Snetselaar, PhD, RDN, FAND, LD[7], Marian L Neuhouser, PhD, RD[2], Susan E. Steck PhD, MPH, RDN, FAND[8], Fred K. Tabung, PhD, MSPH[9], Nazmus Saquib, MBBS, MBA, MPH, PhD[10], JoAnn E. Manson, MD, DRPH[11], Rowan T. Chlebowski, MD, PhD[12]

[1]University of Pennsylvania, [2] Fred Hutchinson Cancer Center, [3]Siteman Cancer Center, [4]Kaiser Permanente Southern California, [5]University of Tennessee Health Science Center, [6]Jonsson Comprehensive Cancer Center, University of California, [7]University of Iowa, Iowa City, IA, [8]AUniversity of South Carolina, [9]The Ohio State University College of Medicine and Comprehensive Cancer Center, [10]Sulaiman AlRajhi University, [11]Harvard Medical School, [12]The Lundquist Institute