**Study title:** Oxidative Stress, Antioxidants and Breast Cancer Risk (R01CA106591)

**PI:** Qi Dai

**Funding source:** NCI

**Matching criteria:** Two controls were randomly selected and matched with each case based on age at baseline (± 2 years), date at study enrollment (≤ 30 days), time (morning or afternoon) of urine collection, intervalsince last meal (≤ 2 hours), menopausal status (pre- or post-),and antibiotic use (yes/no) in the past week.

**1) Biomarkers:** Plasma carotenoids, tocopherols, retinol

Number of cases and controls: 365/726

a. Sample type: plasma

b. Unit of each measurement: ng/mL for each biomarker.

c. Test date: 4/16/08 (Final received date)

d. Test lab: Adrian Franke

e. Lab protocol: Samples for each case-control pair were assayed within the same batch to avoid batch-to-batch variation. Technicians who performed the assays were blinded on any information of the study subjects. A total of 22 types of plasma lipophilic antioxidants were assayed, including total tocopherols, α-tocopherol, β/γ-tocopherol, δ-tocopherol, retinol, total carotenoids, both *cis* and *trans* isomeric forms of β-carotene, *trans* α-carotene, total lycopene, *trans, 5-cis* and *7-cis* lycopene, geometric isomers other than *trans, 5-cis* and *7-cis* lycopene, both *cis* and *trans* isomers of lutein/zeaxanthin, both *cis* and *trans* isomers of anhydrolutein, α- cryptoxanthin, both *trans* and *cis* isomers of β-cryptoxanthin, and *cis* isomer of α-cryptoxanthin. Sample extracts were analyzed by isocratic reverse-phase high-performance liquid chromatography methodology with photo-diode array detection, and absorption spectra and retention times for each peak were compared with those of known standards.

f. Manuscripts using these biomarkers:

1. Plasma carotenoids, tocopherols, retinol and breast cancer risk: results from the Shanghai Women Health Study (SWHS)*.* Tsogzolmaa Dorjgochoo1, Yu-Tang Gao3, Wong-Ho Chow2, Xiao-ou Shu1, Honglan Li3, Gong Yang1, [Qiuyin Cai](https://medschool.mc.vanderbilt.edu/facultydata/php_files/show_faculty.php?%20id3=2650)1, Nathaniel Rothman2,Hui Cai1, Adrian A Franke4, Wei Zheng1, Qi Dai1. Submitted to *American Journal of Clinical Nutrition*
2. Associations between plasma and dietary intakes of antioxidants and levels of oxidative stress. Tsogzolmaa Dorjgochoo… Qi dai *Ongoing*

g. Dataset file name: Pantioxidant\_DaiQi

|  |  |  |
| --- | --- | --- |
| ***ABBREVIATIONS USED in the dataset*** | | ***Unit: ng/mL*** |
| **tr LUT** | **=** | **trans lutein** |
| **tr ZEA** | **=** | **trans zeaxanthin** |
| **Tot. tr LUT/ZEA** | **=** | **Total (trans lutein+trans zeaxanthin)** |
| **Tot. cis LUT/ZEA** | **=** | **Total (cis lutein+cis zeaxanthin)** |
| **tr AH-LUT** | **=** | **trans anhydrolutein** |
| **cis AH-LUT** | **=** | **cis anhydrolutein** |
| **aCRX** | **=** | **trans alpha-cryptoxanthin** |
| **tr bCRX** | **=** | **trans beta-cryptoxanthin** |
| **cis bCRX** | **=** | **cis beta-cryptoxanthin** |
| **LYC** | **=** | **trans+cis lycopene** |
| **DHLYC** | **=** | **Total dihydrolycopene** |
| **Tot.LYCOP** | **=** | **LYC+DHLYC** |
| **aCAR** | **=** | **trans alpha-carotene** |
| **tr bCAR** | **=** | **trans beta-carotene** |
| **cis bCAR** | **=** | **cis beta-carotene** |
| **Tot.bCAR** | **=** | **cis+trans beta-carotene** |
| **Tot. CAROT** | **=** | **ALL CAROTENOIDS (sum of above)** |
|  |  |  |
| **Retinol** | **=** | **Total retinol** |
|  |  |  |
| **d-TOC** | **=** | **delta-tocopherol** |
| **g-TOC** | **=** | **gamma-tocopherol** |
| **b-TOC** | **=** | **beta-tocopherol** |
| **a-TOC** | **=** | **alpha-tocopherol** |
| **Tot\_toc** | **=** | **Total tocopherol (sum of above)** |

**2) Biomarkers:** 15-F2t-Isop and 2,3-dinor-5,6-dihydro-15-F2t-IsoP

Numbers of cases/controls: 434 / 851 for 15-F2t-Isop and 410 / 803 for 2,3-dinor-5,6-dihydro-15-F2t-IsoP.

a. Sample type: Urine

b. Unit of each measurement: ng/mg creatinine for both biomarkers

c. Test date: 2/26/2008 (Final received date)

d. Test lab: Jason Morrow

e. Lab protocol: Urinary excretion of 15-F2t-Isopand its major metabolite of 15-F2t-IsoP, 2,3-dinor-5,6-dihydro-15-F2t-IsoP (2,3-dinor-5,6-dihydro-8-iso-PGF2small alpha, Greek) were measured by gas chromotography/negative ion chemical ionization mass spectrometry (GC/NICI MS) . The method has been reported in detail previously 14,29,30. Briefly, GC/NICI MS is performed using a Hewlett-Packard HP5989A GC/MS instrument interfaced with an IBM Pentium II computer system. The column temperature is programmed from 190° to 300°C at 15°C /min. The metabolite is chemically synthesized and converted to an18O2-labeled derivative for use as an internal standard31.

f. Manuscripts using these biomarkers:

1. Oxidative stress, Obesity, and Breast Cancer Risk: Results from the Shanghai Women Health Study (SWHS)*.* Qi Dai1, Yu-Tang Gao3, Xiao-ou Shu1, Gong Yang1, Ginger Milne2, Qiuyin Cai1, Wanqing Wen1, Nathaniel Rothman4, Hui Cai1, Honglan Li3, Yingbing Xiang3, Wong-Ho Chow4, Wei Zheng1. Submitted to *Journal of Clinical Oncology*.
2. Associations between plasma and dietary intakes of antioxidants and levels of oxidative stress. Tsogzolmaa Dorjgochoo… Qi dai Ongoing
3. Associations of dietary intakes of irons and fatty acids and genetic polymorphisms in the antioxidant enzymes with levels of oxidative stress. Asha Asha Kallianpur… Qi dai *Ongoing*

g. Dataset file name: Isoprostanes\_DaiQi\_new

ABBREVIATIONS USED in the dataset: Isop=F2-isoprostane

Isop\_m=isoprostane metabolite

Creatinine