Good, Great and Precise Diets

Thriving through Cancer Treatment to Recovery with Culinary Nutrition

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Dr. Lisa A. Price, ND

- Research Scientist/National Institute of Health Fellow (2005-2010)
- Author – 3 conventionally published books
- Radio Host and Contributor (1150; KKNW)
- Adjunct faculty (Bastyr University since 2003)
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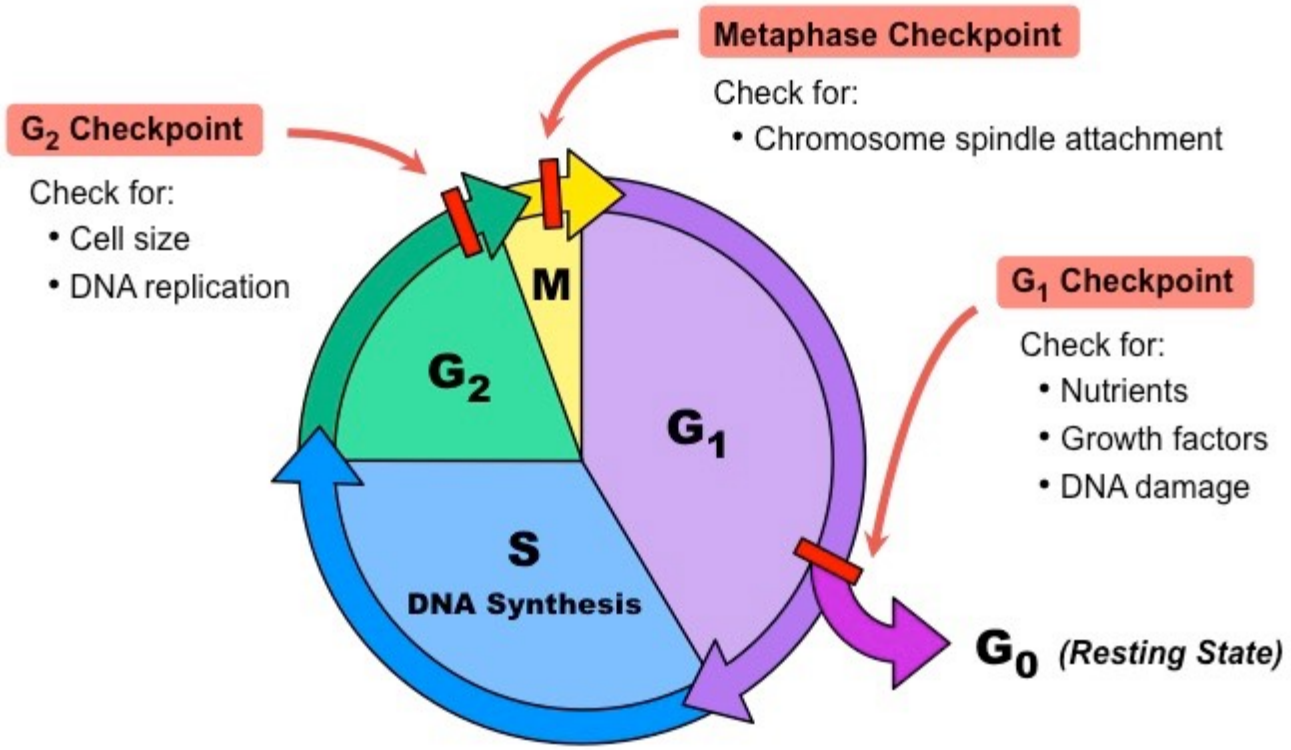

Why nutrients matter: the cell cycle

The cell cycle is composed of a complex array of precise checks and balances to ensure that mutations do not occur.

Mutations can lead to changes that initiate cancer.

The guardians of the cell cycle are composed of proteins and enzymes that use minerals, vitamins and antioxidants as co factors.

AKT, PTEN, IL6, p53

Cell Cycle modulation and regulation

Minerals & Vitamins:

Modulate and regulate. Nutrition modulates gene expression; good example of how gene-nutrient interactions give rise to physiologic responses at the molecular level. These serve as co factors and coenzymes. E.g Magnesium is an essential co factor in DNA fidelity, B12 in DNA replication, C and E in reducing chromosomal damage

Anti oxidants:

Serve to neutralize free radicals (aka oxidants). Normally the body has reserves intrinsically made, and also from the diet. Anti oxidants are typically used as cofactors in enzymes or protein cascades.

Let's talk about inflammation

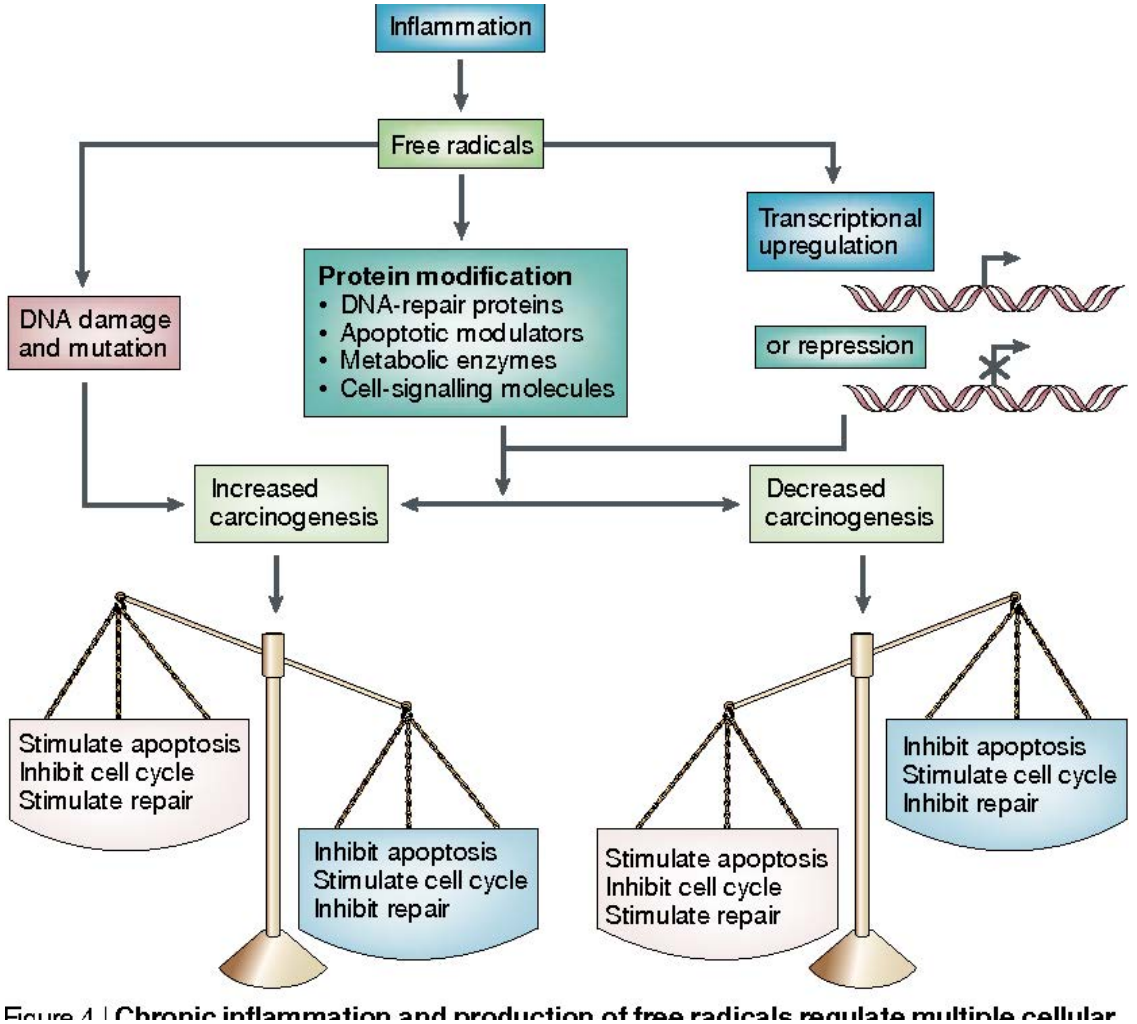

Figure 4 | Chronic inflammation and production of free radicals regulate multiple cellular

Diet Matters in Cancer Development & during Treatment

-Salud Publica Mex. 2016 Apr;58(2):261-73.

The role of diet in cancer: the epidemiologic link. Stepien M, Chajes V, Romieu I.

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Fruit and vegetables and cancer risk: a review of southern European studies. Turati F[1], Rossi M[1], Pelucchi C[1], Levi F[2], La Vecchia C[3].

Nutr Rev. 2016 Dec;74(12):737-748.**Effect of diet on mortality and cancer recurrence among cancer survivors: a systematic review and meta-analysis of cohort studies.**Schwedhelm C[1], Boeing H[1], Hoffmann G[1], Aleksandrova K[1], Schwingshackl L[2].

National Cancer Institute Studies

EPIC study

Diets

Standard American Diets (SAD)

Organic Foods

Plant-based/Anti Inflammatory Diets

Standard American Diets (SAD)

Modern dietary pattern

63% calories from refined and processed food

25% calories come from animal-based foods

12% calories come from plant-based foods (6% of those come from French fries)

Associations (all associated with inflammation):

Obesity, diabetes, coronary artery disease, hypertension, kidney and gallbladder disorders, increased cancer risk

Standard American Diet (SAD)

Why is a SAD associated with increased chronic disease processes?

- Higher glycemic index: insulin, ILGF, IR
- Nutrient deficiencies: cofactors and metabolism
- Anti oxidant deficiencies: inflammation and repair
- Increased levels of saturated fats/decreased unsaturated fats: leads to increased inflammation

Organic Foods

Organic foods are grown without the use of pesticides.

Labeling:

100% organic = organic

Organic = at least 95% organic

Made with organic ingredients = 70% of the ingredients are organic

Recent study (October 2018 JAMA Internal Medicine; N=68, 946) found that eating a diet consisting of mostly organic foods reduced the development of cancer (lymphoma and breast cancer) by up to 25%

Simple intervention that doctors can recommend.

Organic Foods

What could the possible association be?

- Organic foods are absent of pesticides, antibiotics, also hormones

- Reduces risk of allergic disease and obesity (higher omega 3 fatty acid; 50% more)

- Nutrients (phenolic compounds and anti oxidants) are higher; 20 to 40% higher

- Protein content in organic produce is higher

- Lower Cadmium content

Small consistent concentrations of these in the diet matter i.e Blue Zones; it's a marathon, not a sprint.

Plant-based/Anti Inflammatory Diets

Prolonged inflammation can damage cells and increase cancer risk and weaken your immune system.

Plant foods are the only foods that contain anti inflammatory phytonutrients that modulate the inflammatory response and CRP (protein that signals Inflammation).

Plant based foods also have lower glycemic index, balanced fatty acids, etc

Good Diets

Plant-based/Anti Inflammatory Diets

Plant based/Anti Inflammatory during Cancer

Hallmarks:

These diets when applied during cancer treatment aim to generally and broadly supply good sources of macro and micro nutrients the body needs during treatment.

Nutritionally what happens during different cancer therapies?

General nutrient demands & deficiencies caused during therapy

Surgery

Protein

Vitamin B6

Vitamin B12

Magnesium

Tocepherals (Vitamin E)

Vitamin C

Chemotherapy

Calcium

Magnesium

Phosphorus

Sodium

Carnitine

Taurine

L-glutamine

Protein

Folate (B vitamins)

Nutrient demands continued

Radiation

Protein

Vitamin E

Vitamin C

Omega 3 fatty acids

Hormone Therapy

Calcium

Magnesium

Vanadium

Omega 3 fatty acids

Vitamin B12

Great Diets during Cancer Treatment

Hallmarks:

Great diets are good diets but more dynamic. These diets consider the effects of specific treatment therapies on nutrients and nutrient demands.

Great Diets/Dynamic Diets

Surgery

Breast:

Protein, Vitamin E, Vitamin C

Abdominal:

Same as above, but consider simple carbohydrate diet depending on where

Foods for chemotherapy

Cytoxan, Herceptin:

Foods high in heart healthy phytonutrients, heart healthy amino acids

Taxol:

Foods high in L-glutamine, carnitine, Vitamin B12, folate

Platins:

Foods high in Magnesium, Vitamin B6

Great Diets/Dynamic Diets

Radiation

Will depend on radiation area.

Abdominal:

Foods with good sources of soluble fiber, magnesium, butyric acid, magnesium

Breast:

Vitamin E, C, omega 3 fatty acids

Hormone Therapy

Calcium, magnesium, phosphorus, boron, vanadium, omega 3 fatty acid, CoQ10, resveratrol, phosphatidylserine



Precise Diets during Cancer Treatment

Precise Diets during Cancer Treatment to Recovery

Differences in genetic make up (mutations) affect how individuals react to different medicines, diets, foods and even trauma. These differences can be used to create personalized diets during treatment that are more precise than good or great diets.

Hallmarks:

Precision nutrition aims to deliver individualized, actionable dietary therapy based on an individual's nutritional phenotype, created from the integration of genetics, metabolic profile, and environmental factors in order to prevent and affect chronic disease.

Overall, these reports are powerful personalized culinary nutrition for individuals.

Precision Diets

How it works:

Using a complex software analytics (OPUS23) gene mutations

- Analysis of major mutations promoting disease

-Analysis of mutations associated with cell mediated immunity (NK, Macrophage, CD8 and Th1 cells)

- Assess activity & alterations of proteins

-Assess nutritional/dietary factors that work as agonists and antagonist

Precise Diets

AKT (serine-threanine kinase)

Description:

This protein product can suppress apoptosis when activated, & is critical for transmitting growth promoting signals

Foods acting as antagoists:

Peppers, Collard greens, onions, apples, broccoli, green tea, spinach, salmon, turkey, lemongrass, beans, lentils

PTEN (Phosphatase & tensin homolog)

Description:

The protein product is involved in tumor suppression & is carried the most in cancers. It negatively regulates an important signaling pathway (AKT/PKB)

Foods acting as agonists:

Sauerkraut, Kim chi, Pumpkin, carrots, sweet potatoes, salmon, eggs, liver, low fat diets, apples, basil, rosemary, thyme, oysters

Precise Diets and examples of SNPs

IL1B

Description:

Interleukin 1 produced by activated macrophages. This cytokine is an important mediator of the inflammatory response (usually an inflammatory IL), cell proliferation & apoptosis

Foods acting antagonists:

Soybeans, lentils

NFKB1

Description: Nuclear factor kappa B Cells 1. In appropriate activation has been associated with a number of inflammatory disease, but persistent inhibition leads to inappropriate immune response (Natural Killer and CD8 cells)

Foods acting as agonist & antagonists:

Tumeric, fis oil, cinnamon, olive oil, soybean, calorie restriction

Thank you for coming!

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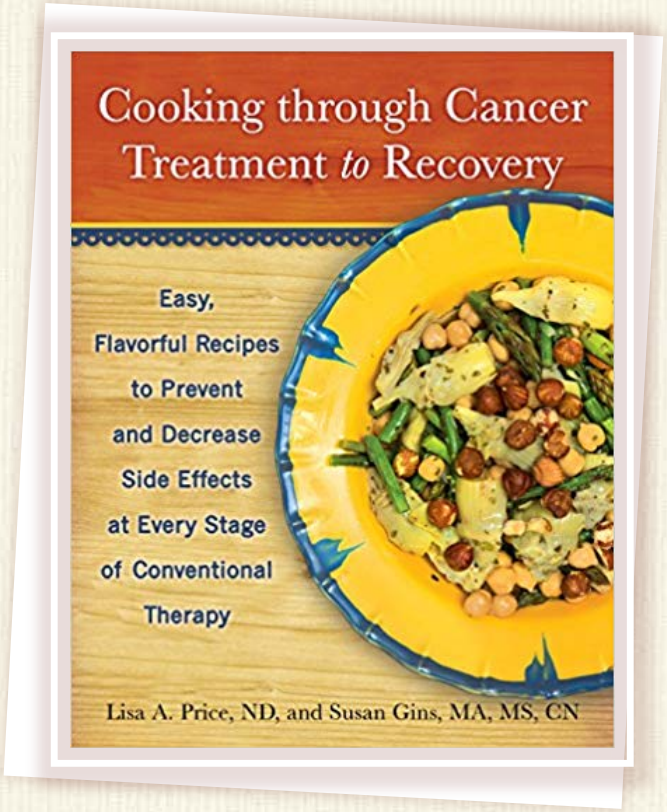

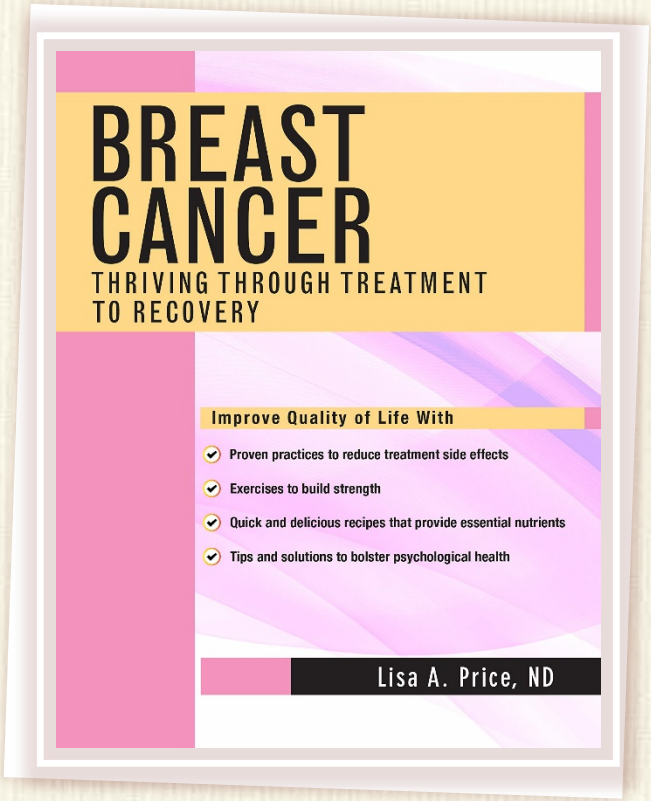

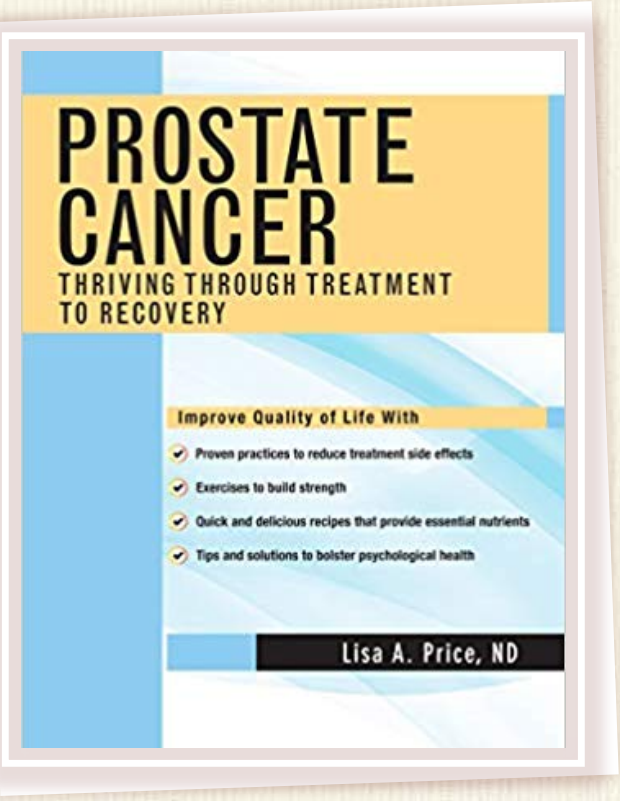

The End

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