



NUTRITION FRONTIERS

A newsletter of the Nutritional Science Research Group

Summer 2013

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Dear Colleague,

Welcome to the Summer 2013 issue of the *Nutrition Frontiers*, a quarterly newsletter from the Nutritional Science Research Group (NSRG), Division of Cancer Prevention, NCI. In this issue, you will learn about the effects of the flavonol, isorhamnetin, on colorectal cancer, distinct pathways for apoptosis with green tea polyphenols, associations of high blood omega-3 PUFAs and much more.

RESEARCH UPDATE: ON THE CLINICAL FRONT

Blood Fatty Acid Levels and Prostate Cancer Risk in a Case-Cohort



[Brasky and colleagues](#) compared men who were diagnosed with prostate cancer with men randomly selected from the SELECT trial cohort. Compared with men in the lowest quartile of baseline blood total long-chain omega-3 PUFA (EPA, DPA, and DHA), men in the highest quartile had 44%, 71% and 43% increased risks for low-grade, high-grade, and total prostate cancer, respectively. In continuous models, each 50% increase in blood omega-3 PUFA was associated with a 22% to 35% increased cancer risk. The authors performed a meta-analysis, which included their results and results from previous prospective biomarker studies - findings support a positive association of high blood omega-3 PUFA with increased risk. Omega-3 supplementation or fish consumption was not assessed. Further research is needed to understand the complex metabolism of long-chain omega-3 PUFA in the human body and to clarify if omega-3 dietary intake contributes to risk.

RESEARCH UPDATE: WHAT'S NEW IN BASIC SCIENCE

Two Distinct Pathways for Apoptosis with Green Tea Polyphenols

The tumor suppressor gene, p53 protein, blocks progression of cell division through the cell cycle inducing apoptosis in cancer cells; p53 is usually inactive in human prostate cancer. Previous studies show



Announcements

Save the date

The 2014 Nutrition and Cancer Prevention Research Practicum will be held March 17-21, 2014 in Rockville, MD. This educational opportunity provides specialized instruction in the role of diet and bioactive food components as modifiers of cancer incidence and tumor behavior. The practicum is intended for graduate students, RDs, and students enrolled in a CADE-accredited supervised practice program. More information about how to apply will be forthcoming. Past practicums can be viewed [here](#).

Upcoming Events

September 9-10, 2013
[Mushrooms & Health Summit](#)
Washington, DC

September 22-24, 2013
American Society of Animal Science and American Society of Nutrition, [Innovations in Animal Growth and Health: The Next Generation of Cell Biology](#)
Braselton, GA

October 16, 2013
Stars in Nutrition and Cancer lecture series, Chi Van Dang, MD, PhD presents "[Links Between Metabolism and Cancer?](#)"
NIH Main Campus
Bethesda, MD

October 19-22, 2013
Academy of Nutrition and



green tea polyphenols (GTP) induce apoptosis in human prostate cancer cells irrespectively of p53's absence or presence, yet the molecular mechanisms have been unclear. [Gupta et al.](#) used the short hairpin-RNA against p53 or control vectors to vary p53 concentration and function in order to investigate the mechanisms of GTP-induced apoptosis in human prostate cancer LNCaP cells. They found GTP affected epigenetic and various signaling pathways. Two distinct molecular mechanisms of GTP-induced apoptosis emerged, an extrinsic pathway activated regardless of p53 status (death receptor pathway) and an intrinsic pathway (mitochondrial death cascade). GTP's ability to promote apoptosis in cancer cells in the absence and presence of p53 warrants further investigation of GTP as a therapeutic agent or prevention.

Chemopreventive Activity of Plant Flavonoid Isorhamnetin in Colorectal Cancer



Isorhamnetin is a flavonol that is present in a wide variety of fruits and vegetables and has been found to have anti-cancer activity. Onion bulbs and beans are amongst the richest source of dietary flavonols. The efficacy of the individual flavonols for preventing colorectal cancer in mice was investigated by [Saud and](#)

[colleagues](#). An isorhamnetin-enriched diet was found to be efficacious in preventing carcinogenesis, decreasing tumor number and tumor burden by 35%, and 59%, respectively. The chemopreventive effects of isorhamnetin were linked to the upregulation of C-terminus Src kinase (CSK), an endogenous inhibitor of oncogenic Src, CSK inhibition of Src activity and inhibition of Src-dependent B-catenin nuclear translocation. An isorhamnetin-enriched diet may have great benefit in preventing colorectal cancer and other Src- dependent carcinogenesis.

SPOTLIGHT: JILL C. PELLING



Jill C. Pelling, PhD is a Professor in the Department of Pathology at Northwestern University Feinberg School of Medicine in Chicago, Illinois. Dr. Pelling received her BS degree from Northwestern University, and her PhD in Microbiology from the University of Michigan. Dr. Pelling's laboratory research has focused on signal transduction pathways involved in chemoprevention of skin and

prostate carcinogenesis. She has been continuously funded by NIH for over 35 years. She serves on the editorial board of *Molecular Carcinogenesis* and in the past has served on the editorial boards of *Carcinogenesis*, and *Nutrition and Cancer*. She has over 16 years of service on NIH advisory panels and

Dietetics, [Food & Nutrition Conference & Expo](#)
Houston, TX

October 27-30, 2013
[AACR International Conference on Frontiers in Cancer Prevention Research](#)
National Harbor, MD

November 7-8, 2013
[AICR Research Conference on Food, Nutrition, Physical Activity and Cancer](#)
Bethesda, MD

December 5-7, 2013
[ASN's Advances & Controversies in Clinical Nutrition](#)
Washington, DC

Quick Links

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study sections, including the National Toxicology Program Board of Scientific Counselors at NIEHS, the NIH Chemical Pathology Study Section and Subcommittee A of the National Cancer Institute. She was recently awarded an NCI-sponsored R01 entitled, [*Apigenin Restores TSP-1 Expression in UVB-Irradiated Keratinocytes*](#).

[Read more »](#)

DID YOU KNOW?

Limes are so Limey



Did you know that limes increase in weight after they've been picked? Limes, native to Southeast Asia, have been around since the 10th century when Arab traders introduced them to Egypt and Northern Africa and later to Spain. Columbus introduced limes to the

New World where they eventually became the citrus of choice for the British navy; they were cheaper than lemons! A Scottish naval surgeon, Sir James Lind, observed that the dreaded scurvy could be kept at bay with a daily ration of lime juice along with their daily ration of rum; hence British seamen became known as Limeys.

A Cuban Mojito traditionally is made with five ingredients: rum to taste, sugar to taste, 1/2 cup of lime juice, 3/4 cup carbonated water, and 1 bunch of mint. Remove the rum and you have a delicious non-alcoholic Mojito Limeade. The "limey" combination of citrus lime and mint makes for a refreshing combination!

References

<http://homecooking.about.com/od/foodhistory/a/limehistory.htm>

<http://www.fitday.com/fitness-articles/nutrition/healthy-eating/the-nutrition-of-limes.html>

<http://www.todaysdietitian.com/newarchives/072709p74.shtml>

Sincerely,

Your friends at the Nutritional Science Research Group

Division of Cancer Prevention
National Cancer Institute
National Institutes of Health
U.S. Department of Health & Human Services

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