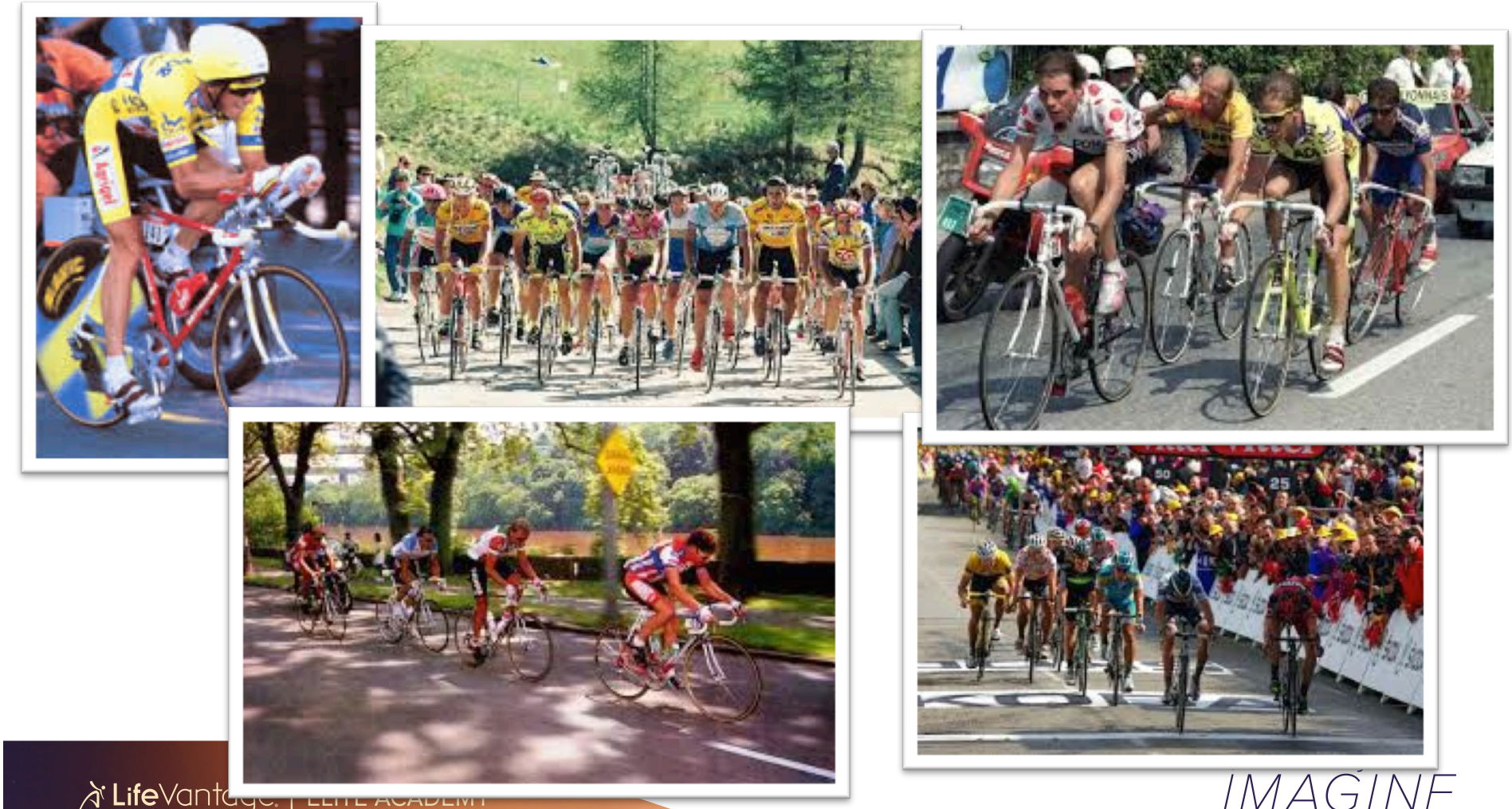
Shawn Talbott, PhD

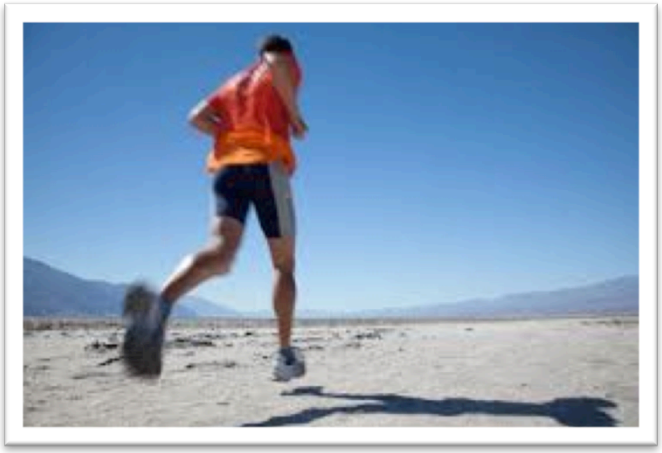
LDN, CNS, FACSM, FAIS, FACN

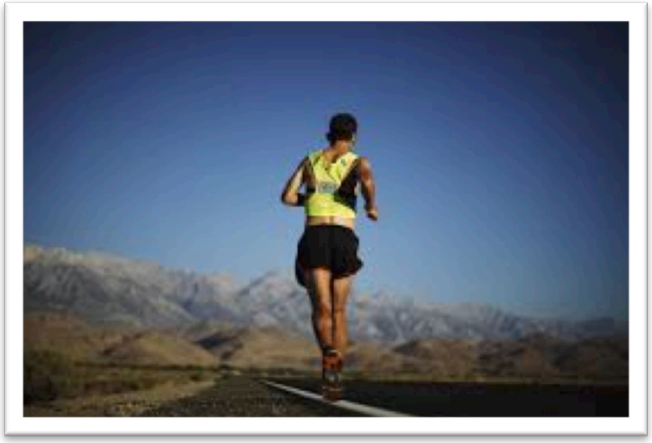
Chief Science Officer

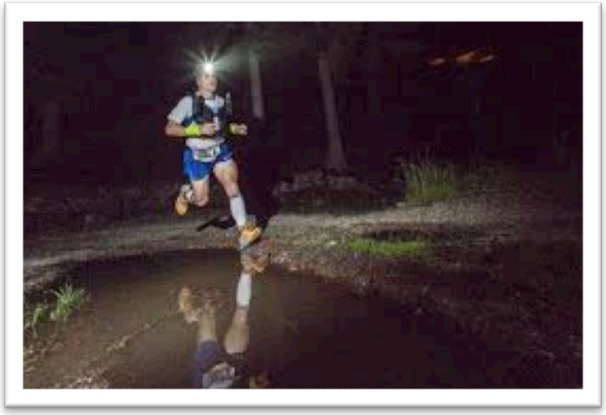


LifeVantage | ELITE ACADEMY

IMAGINE



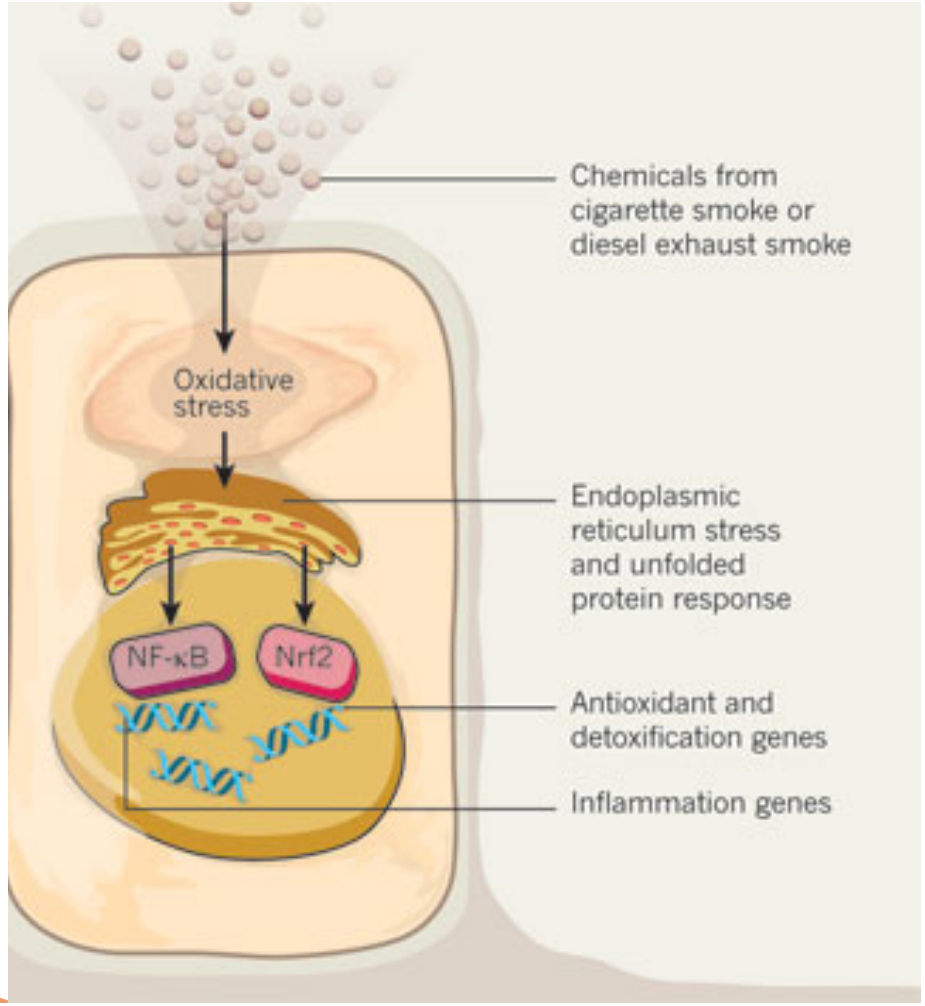




LifeVantage | ELITE ACADEMY

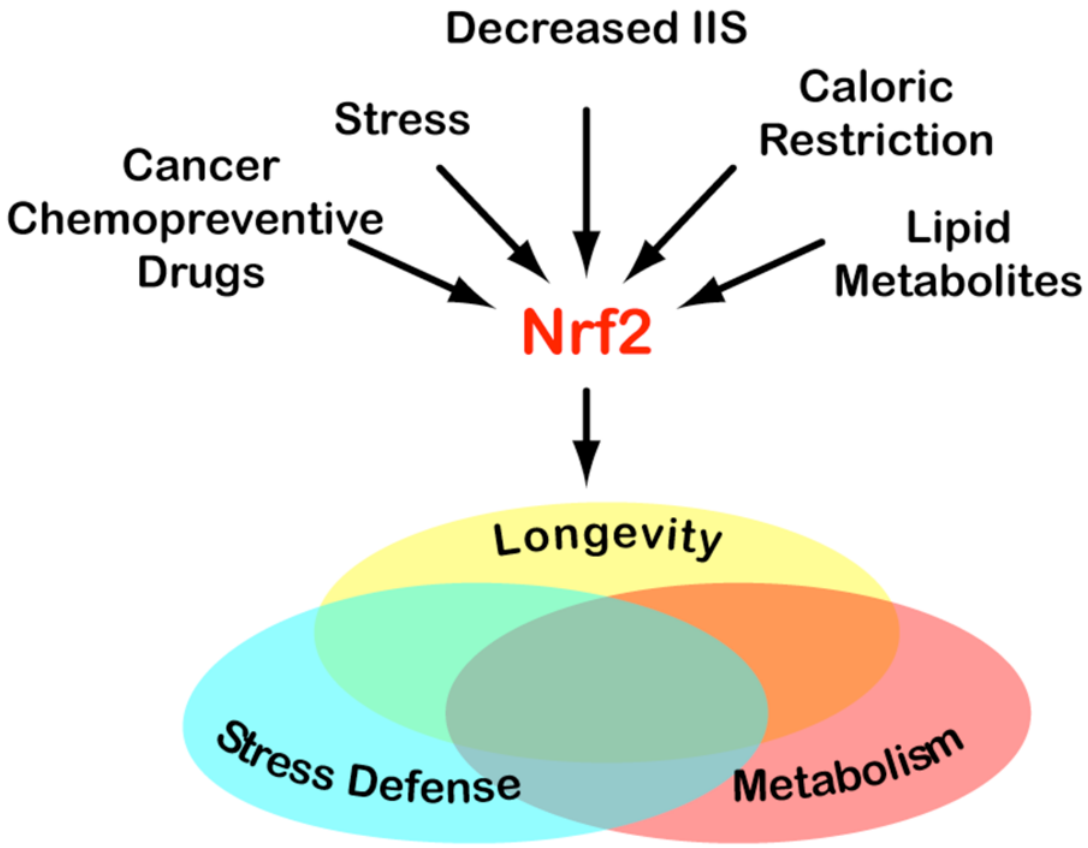
LifeVantage IMAGINE

1968 = SOD
1999= Nrf2
2003 = Lifeline Ther. (Retail)
2009 = LifeVantage (MLM)
2015 = Nrf2 Science Conference (UK)



Nrf2 as a *Convergence Point* for:

- Stress signals
- Metabolic signals
- Longevity signals

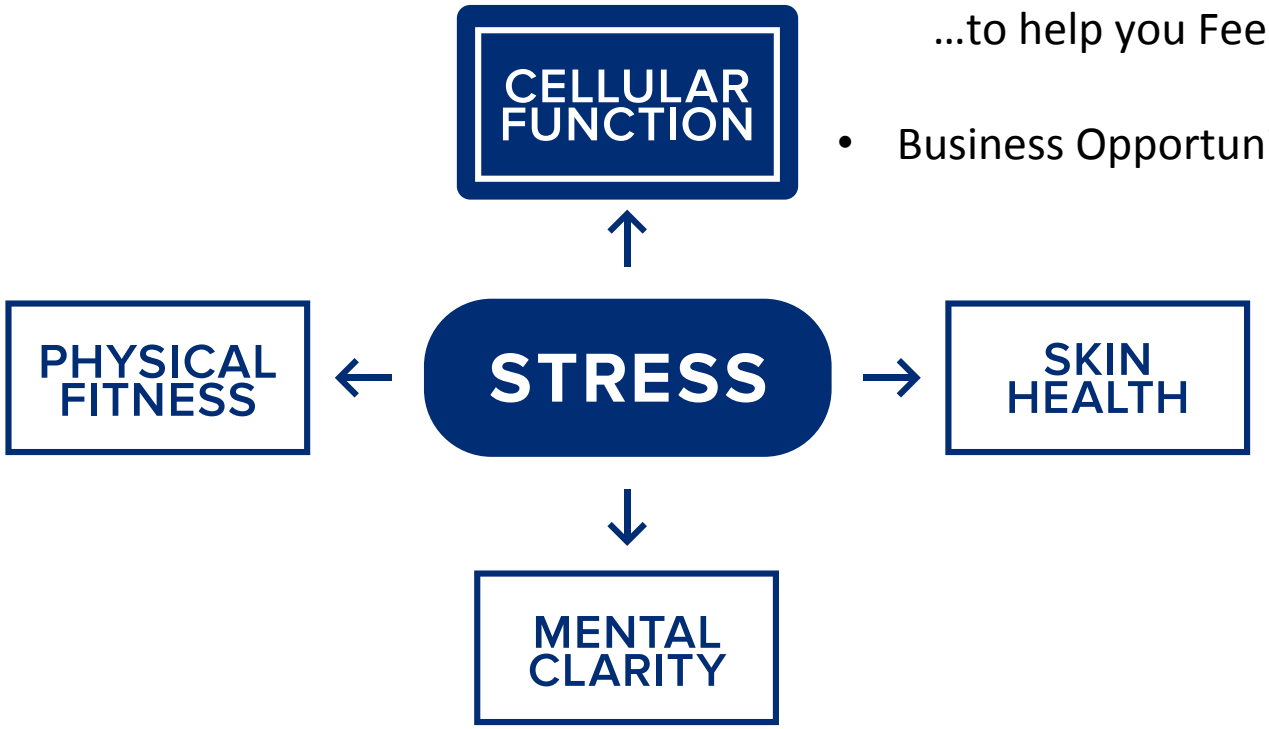


LifeVantage | ELITE ACADEMY

LifeVantage IMAGINE

LifeVantage = “Stress Reduction Company”

- Products = to reduce “cellular stress”
  …to help you Feel – Look – Perform Your Best
- Business Opportunity = to reduce “financial stress”



LifeVantage | ELITE ACADEMY

LifeVantage
IMAGINE

LifeVantage | ELITE ACADEMY

LifeVantage IMAGINE

Causes of Oxidative Stress

Smoking

Diet

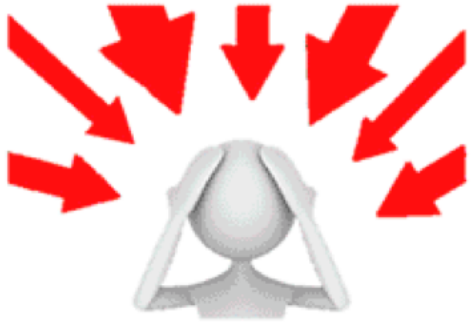
Medication & Treatments

Air & Water Pollutants

Fast Foods [McDonald's]

Stress

Lack of Good Nutrition



Alcohol

Pesticides

Exposure to Toxins

Inadequate Intake of Fruits & Vegetables

Contaminants

Excessive Exercise

Inadequate amounts of physical activity

Just about everything we do results in oxidation (or inflammation) producing potentially damaging free radicals!

ORIGINAL CONTRIBUTION

Vitamin E and the Risk of Prostate Cancer

The Selenium and Vitamin E Cancer Prevention Trial (SELECT)

Eric A. Klein, MD
Ian M. Thompson Jr, MD
Catherine M. Tangen, DrPH
John J. Crowley, PhD
M. Scott Lucia, MD
Phyllis J. Goodman, MS
Lori M. Minasian, MD
Leslie G. Ford, MD
Howard L. Parnes, MD
J. Michael Gaziano, MD, MP
Daniel D. Karp, MD
Michael M. Lieber, MD
Philip J. Walther, MD, PhD
Laurence Klotz, MD
J. Kellogg Parsons, MD, MH
Joseph L. Chin, MD
Amy K. Darke, MS
Scott M. Lippman, MD
Gary E. Goodman, MD
Frank L. Meyskens Jr, MD
Laurence H. Baker, DO

LIFETIME RISK OF PROS
cer in the United Sta
rently estimated to be
though most cases ar
an early, curable stage, tre
costly and urinary, sexual, a
related adverse effects are
Even men who choose activ
lance as an initial manager
egy face anxiety, uncertain
and a measurable risk of sepsi
low-up biopsies,[3] and more
third of those who initially de
are ultimately treated.[4,5] Wi

Author Video Interview ava
www.jama.com.

EFFECTS OF A COMBINATION OF BETA CAROTENE AND VITAMIN A CARDIOVASCULAR DISEASE

GILBERT S. OMENN, M.D., PH.D., GARY E. GOODMAN, M.D., M.S., MARK JOHN BALMES, M.D., MARK R. CULLEN, M.D., ANDREW GLASS, M.D., JA FRANK L. MEYSKENS, JR., M.D., BARBARA VALANIS, DR.P.H., JAMES H. SCOTT BARNHART, M.D., M.P.H., AND SAMUEL HAMMAR,

Abstract *Background.* Lung cancer and cardiovascular disease are major causes of death in the United States. It has been proposed that carotenoids and retinoids are agents that may prevent these disorders.

Methods. We conducted a multicenter, randomized, double-blind, placebo-controlled primary prevention trial — the Beta-Carotene and Retinol Efficacy Trial — involving a total of 18,314 smokers, former smokers, and workers exposed to asbestos. The effects of a combination of 30 mg of beta carotene per day and 25,000 IU of retinol (vitamin A) in the form of palmitate per day on the primary end point, the incidence of lung cancer, were compared with those of placebo.

Results. A total of 388 new cases of lung cancer were diagnosed during the 73,135 person-years of follow-up (mean length of follow-up, 4.0 years). The active-treatment group had a relative risk of lung cancer of 1.28 (95 percent confidence interval, 1.04 to 1.57; P = 0.02), as compared with the placebo group. There were also significantly different

LUNG cancer is the leading cause of death from cancer in the United States, accounting for approximately 29 percent of deaths from cancer and 6 percent of all deaths.[1] New approaches are essential to prevent lung cancer in persons who have smoked cigarettes or who have had occupational exposure to asbestos. Twenty-nine percent of men and 25 percent of women who are 45 to 64 years of age currently smoke,[2] and at least 40 percent of men and 20 percent of women in this age group are former smokers.[3] An estimated 4000 to 6000 deaths from lung cancer per year are attributed to exposure to asbestos.[4,5]

On the basis of epidemiologic observations and laboratory studies, beta carotene and vitamin A have attracted wide interest as agents that may prevent lung cancer.[6,7] The Beta-Carotene and Retinol Efficacy Trial (CARET) is one of several recent trials to assess the chemopreventive efficac
and related agents.[8-13]

This report presents
CARET study, which coi
of the steering committee
to stop the trial's active
ditional end points is ex
five years.

Study Design

The study's strategy, desig
study findings, and recruitment
where.[9,14-16] Briefly, CARET w
domization in Seattle in 1985
men with substantial occupati
randomly assigned in a 1:1 ra
15 mg of beta carotene per da
tive treatment) or placebo; the
with extensive histories of ciga
carotene per day, 25,000 IU of
ther vitamin (two-by-two desig
additional study centers in 198
domly assigned in a 1:1 ratio
The pilot groups receiving active agents were consolidated in 1988
into a single group receiving a standard daily regimen of 30 mg o
beta carotene plus 25,000 IU of retinol in the form of retinyl palmi
tate. Thus, in the pilot study with the cohort of smokers, three sub
jects were assigned to active treatment for every subject assigned t
placebo; therefore, the rates rather than numbers of end points must
be compared between active and placebo groups. The design[13] calle
for active intervention until late 1997 (110,000 person-years), with re
porting of results in 1998.

Eligibility, Recruitment, and Randomization

Workers exposed to asbestos were men 45 to 74 years of age i
the pilot study and 45 to 69 years of age in the later period of re

From the Division of Public Health Sciences, Fred Hutchinson Cancer Research Center, Seattle (G.S.O., G.E.G., M.D.T., S.B.); the Departments of Environmental Health and Medicine, University of Washington, Seattle (G.S.O., G.E.G., S.B., S.H.); the Swedish Hospital Tumor Institute, Seattle (G.E.G.); the Department of Medicine, University of California at San Francisco, San Francisco (J.B.); the Department of Medicine, Yale University, New Haven, Conn. (M.R.C.); Kaiser Permanente Center for Health Research, Portland, Oreg. (A.G., B.V.); the Department of Medicine, University of Maryland, Baltimore (J.P.K.); and the Department of Medicine and Cancer Center, University of California at Irvine, Orange (F.L.M., J.H.W.). Address reprint requests to Dr. Omenn at the Fred Hutchinson Cancer Research Center, Division of Public Health Sciences, 1124 Columbia–MP859, Seattle, WA 98104.

Supported by grants (U01 CA63673, U01 CA63674, U01 CA47989, U01 CA48200, U01 CA48203, U01 CA48196, and U01 CA52596) from the National Cancer Institute.

*Other contributing authors were Carl Andrew Brodkin, M.D. (University of Washington, Seattle), Martin G. Cherniack, M.D. (Yale University, New Haven, Conn.), James E. Grizzle, Ph.D. (Fred Hutchinson Cancer Research Center, Seattle), Marjorie Perloff, M.D. (National Cancer Institute, Bethesda, Md.), and Linda Rosenstock, M.D., M.P.H. (University of Washington, Seattle).

α-Tocopherol and β-Carotene Supplements and Lung Cancer Incidence in the Alpha-Tocopherol, Beta-Carotene Cancer Prevention Study: Effects of Base-line Characteristics and Study Compliance

*Demetrius Albanes, Olli P. Heinonen, Philip R. Taylor, Jarmo Virtamo, Brenda K. Edwards, Matti Rautalahti, Anne M. Hartman, Juni Palmgren, Laurence S. Freedman, Jaason Haapakoski, Michael J. Barrett, Pirjo Pietinen, Nea Malila, Eero Tala, Kari Liippo, Eija-Riitta Salomaa, Joseph A. Tangrea, Lyly Teppo, Frederic B. Askin, Eero Taskinen, Yener Erozan, Peter Greenwald, Jussi K. Huttunen**

Background: Expe
suggest that α-toc
of vitamin E foun
other foods) and
precursor of vitas
dark-green, leafy
the risk of cancer,
ings of the Al
Prevention Study
lung cancer incic
who received β-c
were recently repc
ficacy Trial (CA
carotene and vita
of α-tocopherol a
cidence of lung c
the ATBC Study
age, number of cig
status, and alcoho
in relation to clini
tologic type. Ou
whether the patte
could facilitate fu
Study results and
tion and relevar
total of 29 133 m
or more cigaret
receive α-tocoph
tocopherol and β
(median, 6.1 years
factors for lung ca
study entry, along
tocopherol and β-
= 894) were identi
and death certific
pendently confirm
able for 94% o
evaluated by use
hazards models. A

The Journal of Nutrition
Nutritional Epidemiology

Antioxidant Supplementation Increases the Risk of Skin Cancers in Women but Not in Men[1]

Serge Hercberg,[2,3]* Khaled Ezzedine,[2,4] Christiane Guinot,[5,6] Paul Preziosi,[2] Pilar Galan,[2] Sandrine Bertrais,[2] Carla Estaquio,[2] Serge Briançon,[7] Alain Favier,[8] Julie Latreille,[5] and Denis Malvy[9]

[2]UMR U557 Inserm/U1125 Inra/EA3200 Cnam/Univ Paris 13, Bobigny, France 93017; [3]Unité de Surveillance et d'Epidémiologie Nutritionnelle; Centre de Recherche en Nutrition Humaine Ile-de-France UFR SMBH Paris 13, Bobigny, France 93017; [4]Department of Dermatology, University Hospital Erasme, Université Libre de Bruxelles, Bruxelles, Belgium 1070); [5]Biometrics and Epidemiology Unit, CE.R.I.E.S., Neuilly sur Seine, France 92521; [6]Computer Science Laboratory, Ecole Polytechnique, Université de Tours, Tours, France 37200; [7]EA 3444, Ecole de Santé Publique, Epidémiologie clinique, Faculté de Médecine, CHU Nancy, France 54035; [8]Laboratoire Lésions des Acides Nucléiques, UMR CNRS-CEA-UJF 5046, Grenoble, France 38000; and [9]EA 3677 and Centre René-Labusquière (Tropical Medicine and International Health Branch), Université Victor Segalen Bordeaux 2 and Department of Internal Medicine and Tropical Diseases, University Hospital Center, Bordeaux, France 33076

Abstract

This research aimed to test whether supplementation with a combination of antioxidant vitamins and minerals could reduce the risk of skin cancers (SC). It was performed within the framework of the Supplementation in Vitamins and Mineral Antioxidants study, a randomized, double-blinded, placebo-controlled, primary prevention trial testing the efficacy of nutritional doses of antioxidants in reducing incidence of cancer and ischemic heart disease in the general population. French adults (7876 women and 5141 men) were randomized to take an oral daily capsule of antioxidants (120 mg vitamin C, 30 mg vitamin E, 6 mg β-carotene, 100 μg selenium, and 20 mg zinc) or a matching placebo. The median time of follow-up was 7.5 y. A total of 157 cases of all types of SC were reported, from which 26 were melanomas. Because the effect of antioxidants on SC incidence varied according to gender, men and women were analyzed separately. In women, the incidence of SC was higher in the antioxidant group (adjusted hazard ratio (adjusted HR) = 1.68; $P = 0.03$). Conversely, in men, incidence did not differ between the 2 treatment groups (adjusted HR = 0.68; $P = 0.11$). Despite the small number of events, the incidence of melanoma was also higher in the antioxidant group for women (adjusted HR = 4.31; $P = 0.02$). The incidence of nonmelanoma SC did not differ between the antioxidant and placebo groups (adjusted HR = 1.37; $P = 0.22$ for women and adjusted HR = 0.72; $P = 0.19$ for men). Our findings suggest that antioxidant supplementation affects the incidence of SC differentially in men and women. J. Nutr. 137: 2098–2105, 2007.

Introduction

Melanoma and nonmelanoma skin cancers (SC),[10] namely squamous cell carcinoma (SCC) and basal cell carcinoma (BCC), are the most common forms of malignancy in the Caucasian population (1) and sun exposure is thought to be the main established risk factor for all 3 types of tumor (2). An aging population, more intense exposure to UV rays due to depletion of the ozone layer, and sun exposure habits would appear to favor a higher incidence of skin malignancy (3).

Numerous studies have demonstrated the role of reactive oxygen species, also called free radicals, in skin carcinogenesis and the potential protective effect of antioxidants (4). Formation of free radicals in the skin can be enhanced by UV
cutaneous system has a very efficient interlinke
defense system for counteracting UV-induced ox
However, excessive exposure to sunlight or other
light can overwhelm the skin's antioxidant capa
tially interesting strategy for preventing UV exp
could be to boost the endogenous antioxidant system by oral
intake of antioxidant vitamins and minerals. Although clinical
trials have showed contradictory findings (5–7), oral antioxidant
pills have been recommended for the prevention of sunburns and
for their supposed photoprotective properties.

In particular, it has been suggested that nutrients such as β-carotene, ascorbic acid, vitamin E, selenium, and zinc may prevent such harmful effects of UV exposure because of their antioxidant ability (8). Clinical trials testing the impact of supplementation with high doses of antioxidants over long periods have, however, failed to reveal beneficial effects on the incidence of SC (9,10). For example, the Nutritional Prevention of Cancer trial, a double-blind, randomized clinical trial, was designed to test whether selenium (200 μg/d) could prevent nonmelanoma SC (NMSC) in 1312 individuals with an individual

[1] Author disclosures: S. Hercberg, K. Ezzedine, P. Preziosi, P. Galan, S. Bertrais, C. Estaquio, S. Briançon, A. Favier, and D. Malvy, no conflicts of interest; C. Guinot and J. Latreille, the CE.R.I.E.S. is a research center on human skin founded by OHANEL.

[10] Abbreviations used: BCC, basal cell carcinoma; HR, hazard ratio; MSC, melanoma skin cancer; NMSC, nonmelanoma skin cancer; SC, skin cancer; SCC, squamous cell carcinoma; SU.VI.MAX, Supplementation en Vitamines et Minéraux Antioxydants study.

* To whom correspondence should be addressed. E-mail: hercberg@cnam.fr.

0022-3166/07 $8.00 © 2007 American Society for Nutrition.
Manuscript received 28 February 2007. Initial review completed 21 March 2007. Revision accepted 22 June 2007.

Text

Annals of Internal Medicine | NIH Conference

The Efficacy and Safety of Multivitamin and Mineral Supplement Use To Prevent Cancer and Chronic Disease in Adults: A Systematic Review for a National Institutes of Health State-of-the-Science Conference

Han-Yao Huang, PhD, MPH; Benjamin Caballero, MD, PhD; Stephanie Chang, MD; Anthony J. Alberg, PhD, MPH; Richard D. Semba, MD, MPH; Christine R. Schneyer, MD; Renee F. Wilson, MSc; Ting-Yuan Cheng, MSc; Jason Vassy, MPH; Gregory Prokopowicz, MD, MPH; George J. Barnes II, BA; and Eric B. Bass, MD, MPH

Background: Multivitamin and mineral supplements are the most commonly used dietary supplements in the United States.

Purpose: To synthesize studies on the efficacy and safety of multivitamin/mineral supplement use in primary prevention of cancer and chronic

Data Sourc EMBASE, a hand-search

Study Sele viewed to observation safety.

Data Extra dently asse

Data Synth that assesse trials and 3 quality was disease, cat for the stu population, erol, and se

gastric cancer and the overall mortality rate from cancer by 13% to 21%. In a French trial, combined supplementation with vitamin C, vitamin E, β-carotene, selenium, and zinc reduced the rate of cancer by 31% in men but not in women. Multivitamin and mineral supplements had no significant effect on cardiovascular disease

Multi
con
States (1).
Examinati
recent use
use multiv
quate intal
monly us
supplemer
Many
cluding ci
style, and
these facto
damage, i

Annals
372 | 5 Septem

ORIGINAL INVESTIGATION

LESS IS MORE

Dietary Supplements and Mortality Rate in Older Women

The Iowa Women's Health Study

Jaakko Mursu, PhD; Kim Robien, PhD; Lisa J. Harnack, DrPH, MPH; Kyong Park, PhD; David R. Jacobs Jr, PhD

Background: Although dietary supplements are commonly taken to prevent chronic disease, the long-term health consequences of many compounds are unknown.

Methods: We assessed the use of vitamin and mineral supplements in relation to total mortality in 38 772 older women in the Iowa Women's Health Study; mean age was 61.6 years at baseline in 1986. Supplement use was self-reported in 1986, 1997, and 2004. Through December 31, 2008, a total of 15 594 deaths (40.2%) were identified through the State Health Registry of Iowa and the National Death Index.

Results: In multivariable adjusted proportional hazards regression models, the use of multivitamins (hazard ratio, 1.06; 95% CI, 1.02-1.10; absolute risk increase, 2.4%), vitamin B_6 (1.10; 1.01-1.21; 4.1%), folic acid (1.15; 1.00-1.32; 5.9%), iron (1.10; 1.03-1.17; 3.9%), magnesium (1.08; 1.01-1.15; 3.6%), zinc (1.08; 1.01-1.15; 3.0%), and copper (1.45; 1.20-1.75; 18.0%) were associated with increased risk of total mortality when compared with corresponding nonuse. Use of calcium was inversely related (hazard ratio, 0.91; 95% confidence interval, 0.88-0.94; absolute risk reduction, 3.8%). Findings for iron and calcium were replicated in separate, shorter-term analyses (10-year, 6-year, and 4-year follow-up), each with approximately 15% of the original participants having died, starting in 1986, 1997, and 2004.

Conclusions: In older women, several commonly used dietary vitamin and mineral supplements may be associated with increased total mortality risk; this association is strongest with supplemental iron. In contrast to the findings of many studies, calcium is associated with decreased risk.

Arch Intern Med. 2011;171(18):1625-1633

IN THE UNITED STATES, THE USE OF dietary supplements has increased substantially during the past several decades,[1-3] reaching approximately one-half of adults in 2000, with annual sales of more than $20 billion.[1-3] Sixty-six percent of women participating in the Iowa Women's Health Study[2] used at least 1 dietary supplement daily in 1986 at an average age of 62 years; in 2004, the proportion increased to 85%. Moreover, 27% of women reported using 4 or more supplemental products in 2004.[2] At the population level, dietary supplements contributed substantially to the total intake of several nutrients, particularly in elderly individuals.[1,2]

Supplemental nutrient intake clearly is beneficial in deficiency conditions.[3] However, in well-nourished populations, supplements often are intended to yield benefit by preventing chronic diseases. Results of epidemiologic studies[4-9] assessing supplement use and total mortality risk have been inconsistent. Several randomized controlled trials (RCTs),[10,11] concentrating mainly on calcium and vitamins B, C, D, and E, have not shown beneficial effects of

See Invited Commentary and Editor's Note at end of article

Author Affiliations: Department of Health Sciences, Institute of Public Health and Clinical Nutrition, University of Eastern Finland, Kuopio Campus, Kuopio, Finland (Dr Mursu); Division of Epidemiology and Community Health, School of Public Health, University of Minnesota, Minneapolis (Drs Mursu, Robien, Harnack, and Jacobs); Department of Food and Nutrition, Yeungnam University, Gyeongbuk, Republic of Korea (Dr Park); and Department of Nutrition, School of Medicine, University of Oslo, Oslo, Norway (Dr Jacobs).

Circulation
JOURNAL OF THE AMERICAN HEART ASSOCIATION
Heart Failure

Chronic Pulmonary Artery Pressure Elevation Is Insufficient to Explain Right Heart Failure

Harm J. Bogaard. MD. PhD*: Ramesh Nataraian. PhD*: Scott C. Henderson. PhD: Carlin

Free Radical Biology & Medicine 50 (2011) 700–709

Background— function, bu of data on t
Methods and banding, nc angiopoiti hypertroph that was as endothelial factor-1α. I (Protandim
Conclusion— hypertensio

Ke

Contents lists available at ScienceDirect
Free Radical Biology & Medicine
journal homepage: www.elsevier.com/locate/freerad

Original Contribution

Protandim attenuates intimal hyperplasia in human saphenous v ex vivo via a catalase-dependent pathway

Binata Joddar [a,b,c], Rashmeet K. Reen [b,d], Michael S. Firstenberg [e], Saradhadevi Varadl Jay L. Zweier [b], Keith J. Gooch [a,b,*]

[a] Department of Biomedical Engineering, The Ohio State University, Columbus, OH 43210, USA
[b] Davis Heart & Lung Research Institute, The Ohio State University, Columbus, OH 43210, USA
[c] RIKEN Nanomedical Engineering Laboratory, Wako-shi, Saitama 351-0198, Japan
[d] Department of Surgery, The Ohio State University, Columbus, OH 43210, USA
[e] Department of Cardiothoracic Surgery, The Ohio State University, Columbus, OH 43210, USA
[f] Division of Pulmonary and Critical Care Medicine, Department of Medicine, University of Colorado at Denver, Aurora, CO 80045, USA

ARTICLE INFO

Article history:
Received 26 August 2010
Revised 7 December 2010
Accepted 8 December 2010
Available online 15 December 2010

Keywords:
Free radicals
Scavenging enzymes
Catalase
Human saphenous veins
Ex vivo culture
Protandim

ABSTRACT

Human saphenous veins (HSVs) are widely used for bypass grafts desp patency. To evaluate the role of reactive oxygen species (ROS) signaling i stage pathology of vein-graft disease, and to explore the potential th endogenous antio model of HSV IH. ~3.6-fold increase Protandim, a nutr enzymes in severa isolated HSV. Prot respectively, and d catalase activity by and proliferation. I cultured HSV and

OPEN ACCESS Freely available online
PLoS one

Protandim, a Fundamentally New Antioxidant Approach in Chemoprevention Using Mouse Two-Stage Skin Carcinogenesis as a Model

Jianfeng Liu[1], Xin Gu[2], Delira Robbins[1], Guohong Li[3], Runhua Shi[4], Joe M. McCord[5], Yunfeng Zhao[1]*

1 Department of Pharmacology, Toxicology & Neuroscience, Louisiana State University Health Sciences Center, Shreveport, Louisiana, United States of America, 2 Department of Pathology, Louisiana State University Health Sciences Center, Shreveport, Louisiana, United States of America, 3 Department of Neurosurgery, Louisiana State University Health Sciences Center, Shreveport, Louisiana, United States of America, 4 Feist-Weiller Cancer Center, Louisiana State University Health Sciences Center, Shreveport, Louisiana, United States of America, 5 Department of Medicine, University of Colorado Health Sciences Center, Denver, Colorado, United States of America

Abstract

Oxidative stress is an important contributor to cancer development. Consistent with that, antioxidant enzymes have been demonstrated to suppress tumorigenesis when being elevated both in vitro and in vivo, making induction of these enzymes a more potent approach for cancer prevention. Protandim, a well-defined combination of widely studied medicinal plants, has been shown to induce superoxide dismutase (SOD) and catalase activities and reduce superoxide generation and lipid peroxidation in healthy human subjects. To investigate whether Protandim can suppress tumor formation by a dietary approach, a two-stage mouse skin carcinogenesis study was performed. At the end of the study, the mice on a Protandim-containing basal diet had similar body weight compared with those on the basal diet, which indicated no overt toxicity by Protandim. After three weeks on the diets, there was a significant increase in the expression levels of SOD and catalase, in addition to the increases in SOD activities. Importantly, at the end of the carcinogenesis study, both skin tumor incidence and multiplicity were reduced in the mice on the Protandim diet by 33% and 57% respectively, compared with those on basal diet. Biochemical and histological studies revealed that the Protandim diet suppressed tumor promoter-induced oxidative stress (evidenced by reduction of protein carbonyl levels), cell proliferation (evidenced by reduction of skin hyperplasia and suppression of PKC/JNK/Jun pathway), and inflammation (evidenced by reduction of ICAM-1/VCAM-1 expression, NF-κB binding activity, and nuclear p65/p50 levels). Overall, induction of antioxidant enzymes by Protandim may serve as a practical and potent approach for cancer prevention.

healthcare

The Dietary Supplement Protandim® Decreases Plasma Osteopontin and Improves Markers of Oxidative Stress in Muscular Dystrophy *Mdx* Mice

Muhammad Muddasir Qureshi, MD, MPH
Warren C. McClure, MS
Nicole L. Arevalo, MA
Rick E. Rabon, BA
Benjamin Mohr
Swapan K. Bose, BS, BPharm
Joe M. McCord, PhD
Brian S. Tseng, MD, PhD

Contents lists available at ScienceDirect
Free Radical Biology & Medicine
journal homepage: www.elsevier.com/locate/freeradbiomed

Original Contribution

Synergistic induction of heme oxygenase-1 by the components of the antioxidant supplement Protandim

Kalpana Velmurugan [a,b], Jawed Alam [c], Joe M. McCord [d], Subbiah Pugazhenthi [a,b,*]

[a] Division of Endocrinology, Department of Medicine,
[b] Section of Endocrinology, Veterans Affairs Medical
[c] Department of Molecular Genetics, Ochsner Medica
[d] Division of Pulmonary Sciences, Department of Me

ARTICLE INFO

Article history:
Received 8 July 2008
Revised 23 September 2008
Accepted 31 October 2008
e online 17 November 2008

Is:
re stress
oxygenase-1
in
im
dant supplement

emicals
licals

Available online at www.sciencedirect.com
SCIENCE DIRECT
Free Radical Biology & Medicine 40 (2006) 341 – 347
www.elsevier.com/locate/freeradbiomed

Original Contribution

The induction of human superoxide dismutase and catalase in vivo: A fundamentally new approach to antioxidant therapy

Sally K. Nelson [a,b], Swapan K. Bose [a], Gary K. Grunwald [c], Paul Myhill [d], Joe M. McCord [a,b,d,*]

[a] Webb-Waring Institute for Cancer, Aging and Antioxidant Research, University of Colorado Denver Health Sciences Center, Denver, CO 80262, USA
[b] Department of Medicine, University of Colorado Denver Health Sciences Center, Denver, CO 80262, USA
[c] Department of Preventive Medicine and Biometrics, University of Colorado Denver Health Sciences Center, Denver, CO 80262, USA
[d] Lifeline Therapeutics, Denver, CO, USA

Received 22 June 2005; revised 24 August 2005; accepted 28 August 2005

Abstract

A composition consisting of extracts of five widely studied medicinal plants (Protandim) was administered to healthy human subjects ranging in age from 20 to 78 years. Individual ingredients were selected on the basis of published findings of induction of superoxide dismutase (SOD) and/or catalase in rodents in vivo, combined with evidence of decreasing lipid peroxidation. Each ingredient was present at a dosage sufficiently low to avoid any accompanying unwanted pharmacological effects. Blood was analyzed before supplementation and after 30 and 120 days of supplementation (675 mg/day). Erythrocytes were assayed for SOD and catalase, and plasma was assayed for lipid peroxidation products as thiobarbituric acid-reacting substances (TBARS), as well as uric acid, C-reactive protein, and cholesterol (total, LDL, and HDL). Before

OPEN ACCESS Freely available online
PLoS one

The Chemopreventive Effects of Protandim: Modulation of p53 Mitochondrial Translocation and Apoptosis during Skin Carcinogenesis

Delira Robbins[1], Xin Gu[2], Runhua Shi[6], Jianfeng Liu[1], Fei Wang[3], Jacqulyne Ponville[4], Joe M. McCord[5], Yunfeng Zhao[1]*

1 Department of Pharmacology, Toxicology and Neuroscience, Louisiana State University Health Sciences Center, Shreveport, Louisiana, United States of America, 2 Department of Pathology, Louisiana State University Health Sciences Center, Shreveport, Louisiana, United States of America, 3 College of Life Science, Jilin University, Changchun, Jilin Province, China, 4 Department of Chemistry, Nicholls State University, Thibodaux, Louisiana, United States of America, 5 Department of Medicine, University of Colorado at Denver and Health Sciences Center, Aurora, Colorado, United States of America, 6 Feist-Weiller Cancer Center, Louisiana State University Health Sciences Center, Shreveport, Louisiana, United States of America

Abstract

Protandim, a well defined dietary combination of 5 well-established medicinal plants, is known to induce endogenous antioxidant enzymes, such as manganese superoxide dismutase (MnSOD). Our previous studies have shown through the induction of various antioxidant enzymes, products of oxidative damage can be decreased. In addition, we have shown that tumor multiplicity and incidence can be decreased through the dietary administration of Protandim in the two-stage skin carcinogenesis mouse model. It has been demonstrated that cell proliferation is accommodated by cell death during DMBA/TPA treatment in the two-stage skin carcinogenesis model. Therefore, we investigated the effects of the Protandim diet on apoptosis; and proposed a novel mechanism of chemoprevention utilized by the Protandim dietary combination. Interestingly, Protandim suppressed DMBA/TPA induced cutaneous apoptosis. Recently, more attention has been focused on transcription-independent mechanisms of the tumor suppressor, p53, that mediate apoptosis. It is known that cytoplasmic p53 rapidly translocates to the mitochondria in response to pro-apoptotic stress. Our results showed that Protandim suppressed the mitochondrial translocation of p53 and mitochondrial outer membrane proteins such as Bax. We examined the levels of p53 and MnSOD expression/activity in murine skin JB6 promotion sensitive (P+) and promotion-resistant (P-) epidermal cells. Interestingly, p53 was induced only in P+ cells, not P- cells; whereas MnSOD is highly expressed in P- cells when compared to P+ cells. In addition, wild-type p53 was transfected into JB6 P- cells. We found that the introduction of wild-type p53 promoted transformation in JB6 P- cells. Our results suggest that suppression of p53 and induction of MnSOD may play an important role in the tumor suppressive activity of Protandim.

US007241

(12) **United States Patent**
Myhill et al.

(10) **Patent No.:**
(45) **Date of Patent:**

(54) **COMPOSITIONS FOR ALLEVIATING INFLAMMATION AND OXIDATIVE STRESS IN A MAMMAL**

(75) Inventors: **Paul R. Myhill**, Castle Rock, CO (US); **William J. Driscoll**, Englewood, CO (US)

(73) Assignee: **Lifeline Nutraceuticals Corporation**, Englewood, CO (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35

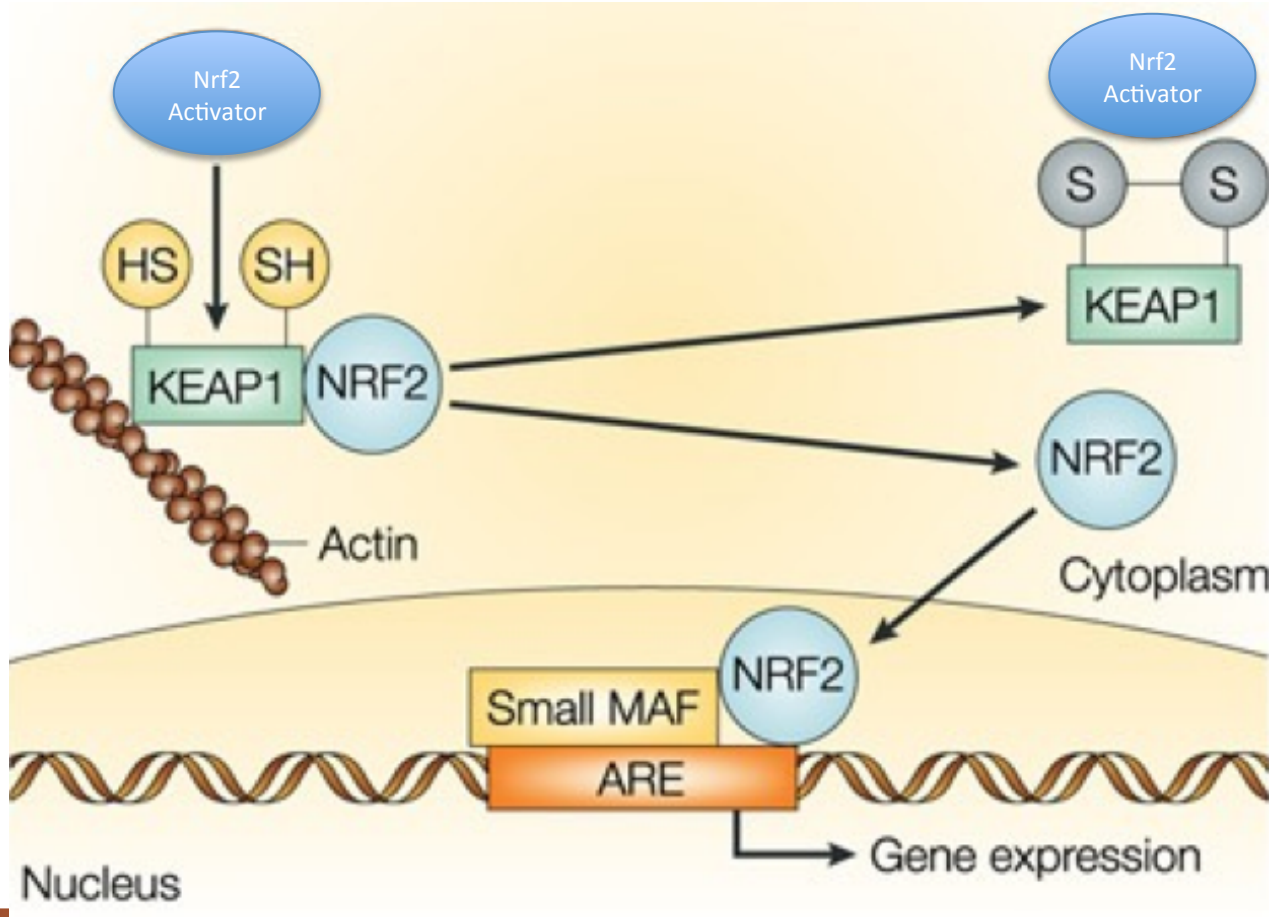
Al-Shaer, "C-Reactive Protein and 2004; vol. 291, No. 23: pp. 2818-2 Anderson, et al., "Differential Resp Cells to Induction of Apoptosis by V E Analogue, α-TEA," *Cancer Res.*, Baker, et al., "Reduced RBC Versu Due to Endotoxin," *Circul. Shock*, Barbosa, et al., "Decreased Oxidativ ative Colitis Supplemented with Fi *tion*, 2003; vol. 19: pp. 837-842. Bhattacharya, et al., "Antioxidant from *Withania somnifera*," *Ind. J. Exper. Biol.*, 1997; vol. 35: pp. 236-239.

Contents lists available at SciVerse ScienceDirect
Molecular Aspects of Medicine
journal homepage: www.elsevier.com/locate/mam

Oxidative Stress in Health and Disease: The Therapeutic Potential of Nrf2 Activation

Brooks M. Hybertson,[a,b] Bifeng Gao,[a] Swapan K. Bose[a] and Joe M. McCord[a,b]

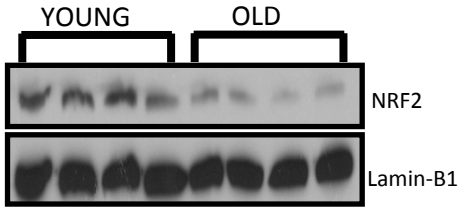
[a]Department of Medicine, Division of Pulmonary Science and Critical Care Medicine, University of Colorado at Denver, Aurora, CO 80045
[b]LifeVantage Corporation, 10813 S. Riverfront Parkway, South Jordan, UT 84095

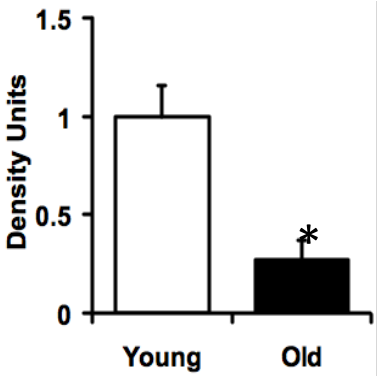

Nrf2
Activator
HS
SH
KEAP1
NRF2
Actin
Nrf2
Activator
S
S
KEAP1
NRF2
Cytoplasm
NRF2
Small MAF
ARE
Gene expression
Nucleus

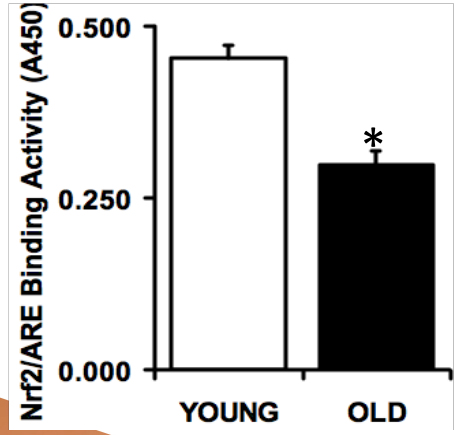
Don't *Take* Antioxidants *Make* Antioxidants!

Nrf2 Declines with Age and Induces Oxidative Stress

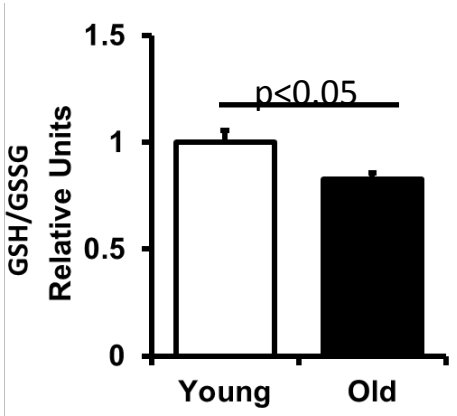
WT (C57/Bl6) Mouse

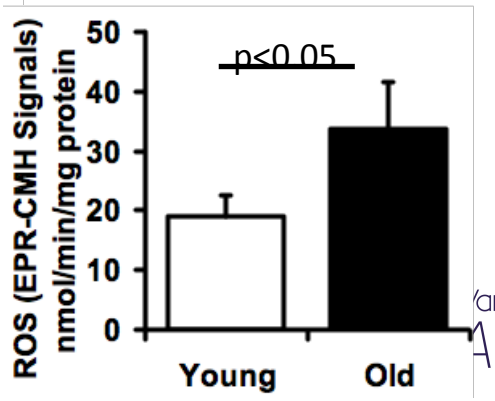






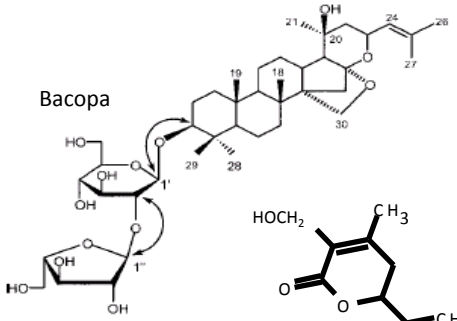
Increased oxidative stress



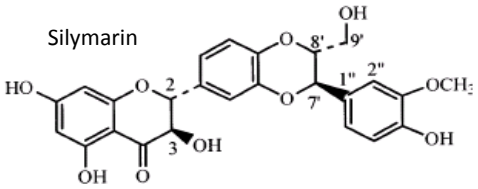


Nrf2 = a powerful “master regulator” of antioxidant enzymes and survival genes

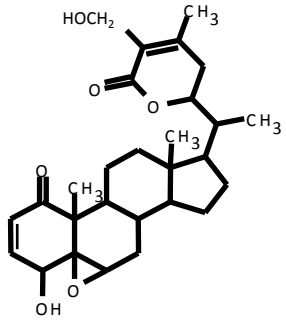
Bacopa

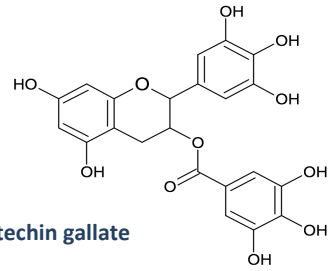


Silymarin



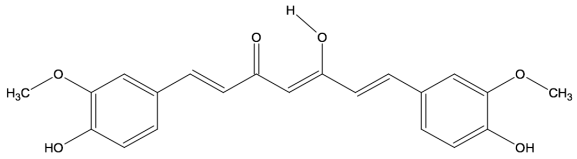
Withaferin A

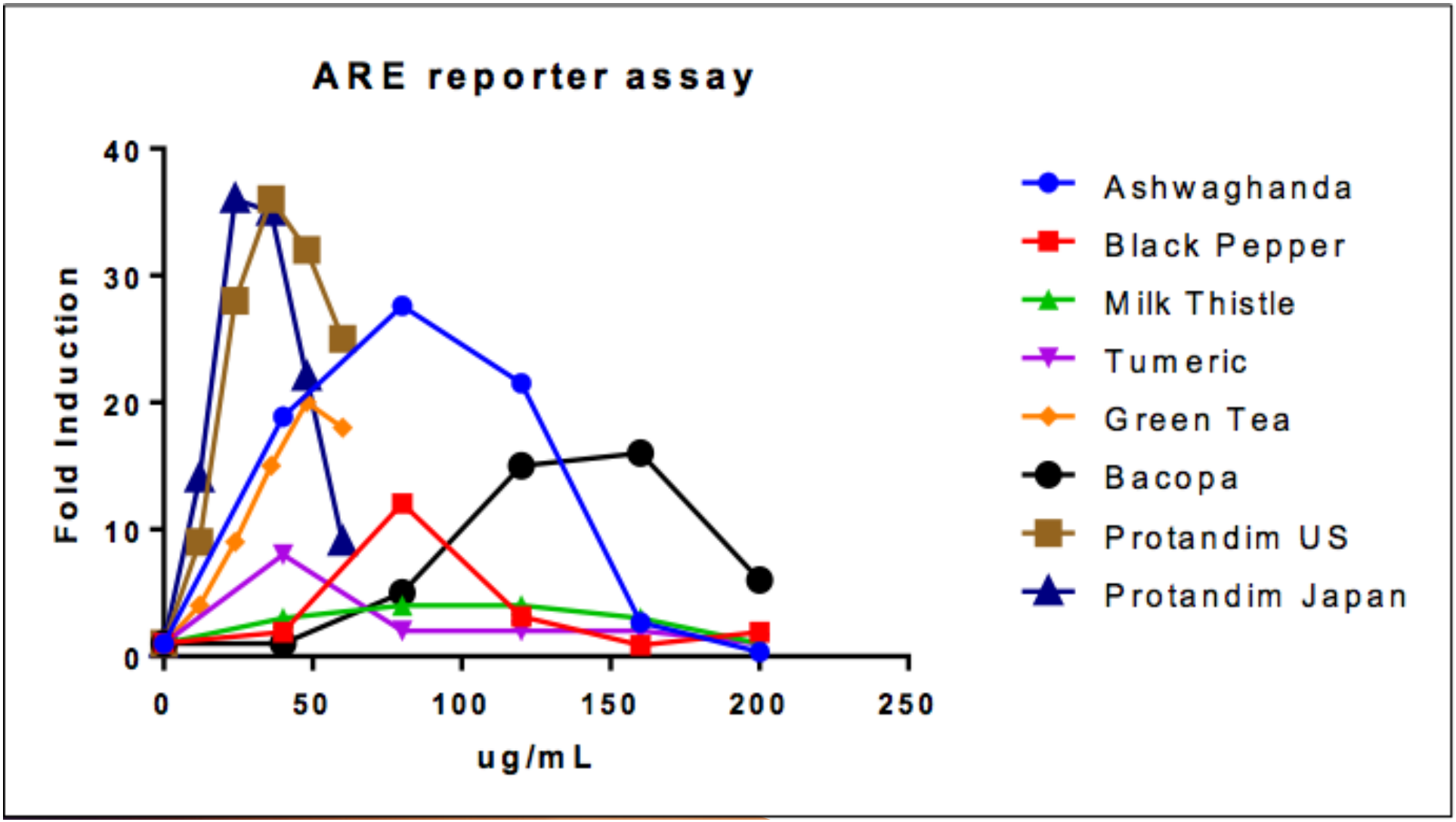


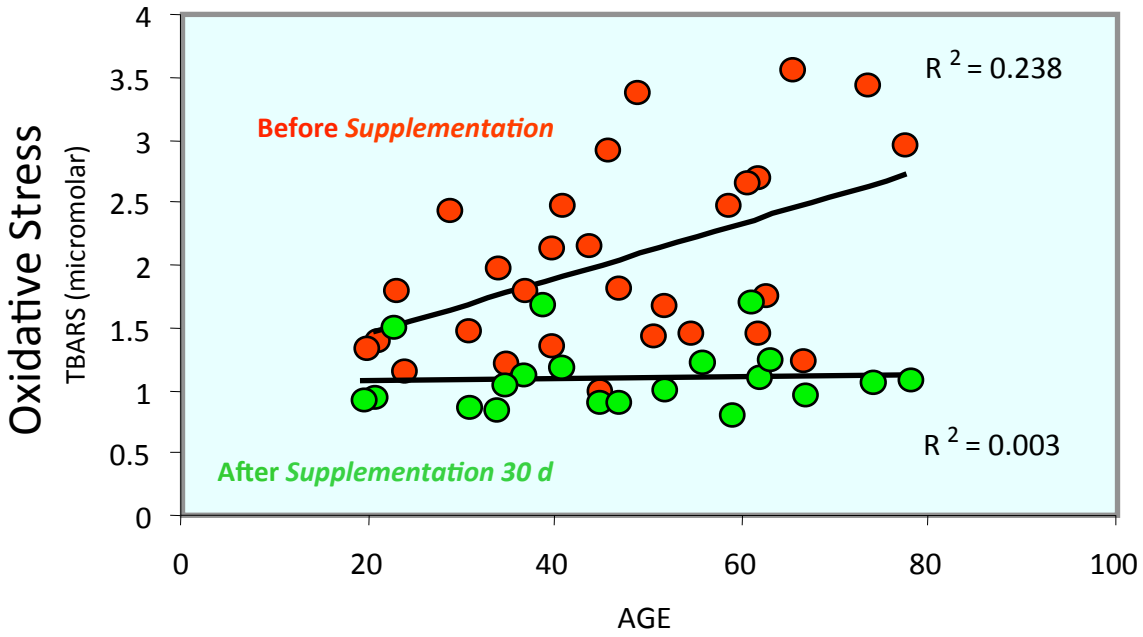


Epigallocatechin gallate
EGCG

Curcumin




ARE reporter assay
Fold Induction
40
30
20
10
0
0
50
100
150
200
250
ug/mL
Ashwaghanda
Black Pepper
Milk Thistle
Tumeric
Green Tea
Bacopa
Protandim US
Protandim Japan



After 30 days…

"Remarkably, this age-dependent increase in TBARS was almost completely abolished by Protandim treatment (Fig. 1D), with an overall average reduction of the oxidative stress marker by 40%."

Look Your Best

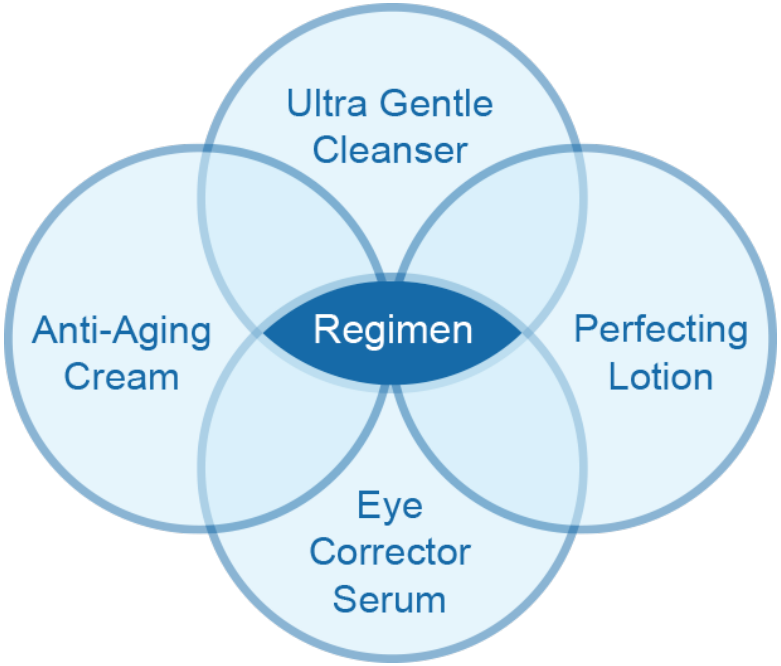
LifeVantage IMAGINE

What constitutes Enhanced Nrf2 Technology?

- Original 5-plant blend (*Bacopa, Milk Thistle, Turmeric, Green tea, Black Pepper extracts*)
- Enhanced with:
  - Brassica extracts (cabbage, broccoli, cauliflower, wasabi. …)
  - Plantain (Plantago) extract

- **Steps up the skin's own protective barrier against oxidative stress**

Enhanced Nrf2 Skin Care Regimen



- Working together to rejuvenate and heal aging skin
- With the latest in enhanced Nrf2 technologies for more protection against oxidative stress
- Yuzu fragrance in all but eye serum

LOOK Your Best…

***TrueScience* Regimen is equal/better compared to top "prestige" brands**

Competitor	Study of 86 ladies	TS @ 28 Days	TS @ 56 Days
89% Perricone MD Cold Plasma at 4 weeks 75% Jeunesse Global Luminesce Cellular Rejuvenation at 8 weeks	Smoother looking skin	89%	94%
80% Nu Skin TruFace at 3 months	Firmer looking skin	81%	85%
78% L'Oreal Youth Code at 8 weeks	Younger looking skin		87%
70% Lancôme Dream Tone at 8 weeks 79% SkinMedica Lytera at 12 weeks	More even skin tone		83%
79% Clarins Double Serum at 4 weeks [Hydric + Lipidic System] 80% Nu skin 180°System at 8 weeks	Less noticeable fine lines and wrinkles	78%	82%

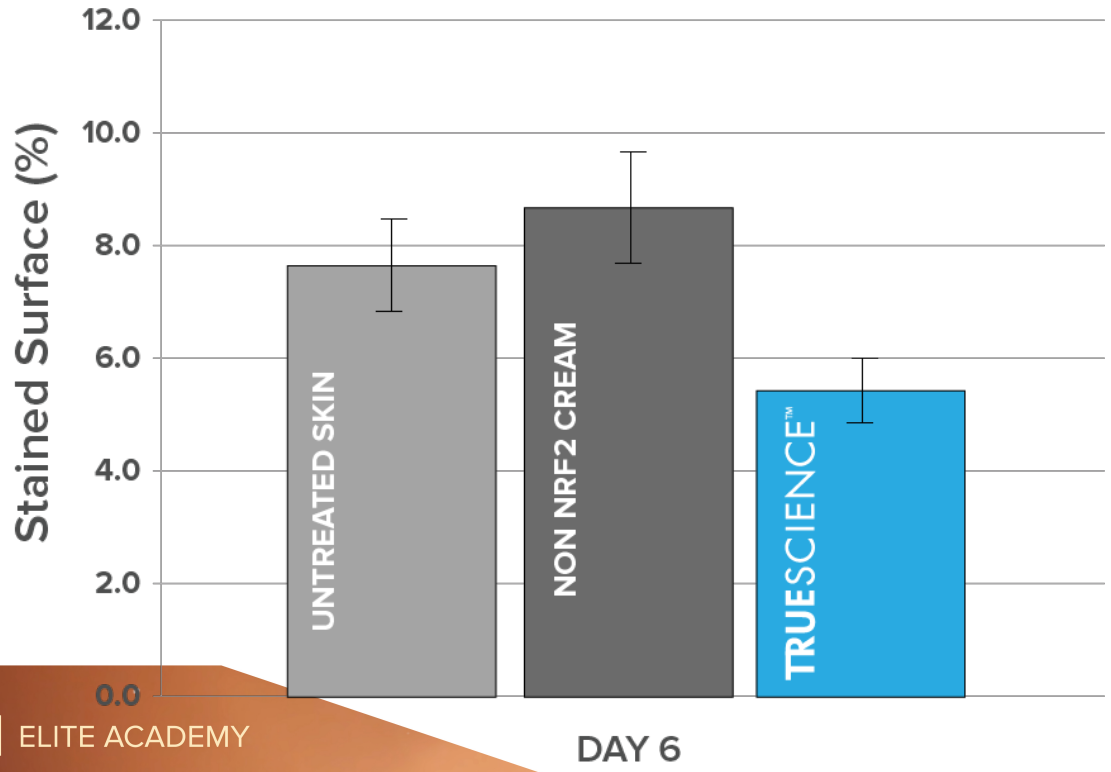
Cold Plasma is a trademark of Perricone MD
Youth Code is a trademark of L'Oreal
Dream Tone is a trademark of Lancôme
Lytera is a trademark of SkinMedica
Double Serum [Hydric + Lipidic System] is a trademark of Clarins

Versus Select Competitive Ads*

LifeVantage FREEDOM

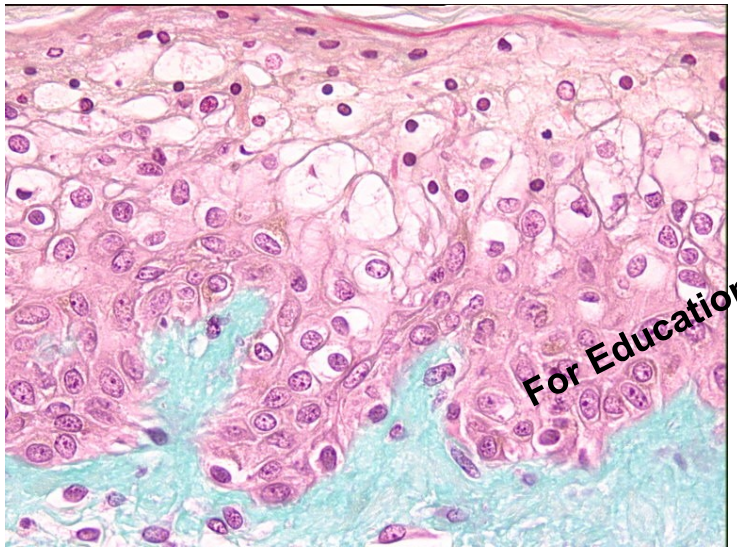
Less Thymine Dimers with TrueScience

TrueScience™ Facial Cream with Nrf2 protects the cell DNA!



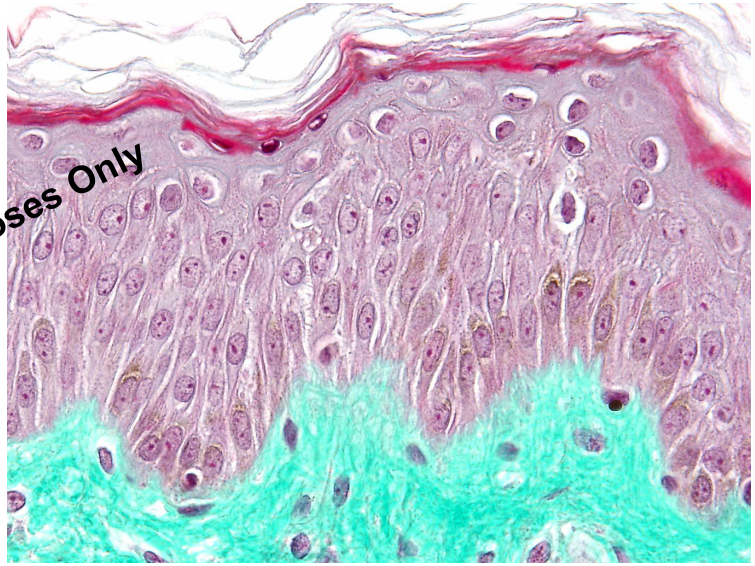
Help your Skin...

Retinol Facial Cream after 7 days



6 to 7 cell layers with damaged and bloated cells & pyknotic nucleus (condensed chromatin);

Nrf2 Facial Cream after 7 Days



6 to 7 cell layers with good morphology and organization
Denser dermis

LifeVantage | ELITE ACADEMY

LifeVantage IMAGINE

Research on TS regimen and Skin Explants will be presented at the International Federation of the Society of Cosmetic Chemists (IFSCC) in September 2015 in Zurich, Switzerland

Title: Anti-aging effect of a new topical cream demonstrated by gene modulation and morphology studies of the skin layers

Objective: With aging comes great wisdom and older looking skin. For years, retinoids have been held forth as the gold standard of anti-ageing treatments. Adverse effects to retinoids, which are limiting their continued use, prompted us to develop alternative molecules behaving superiorly in terms of tolerability, stability and efficacy. We present a new cream (TS cream) that showed extensive anti-ageing efficacy throughout all skin layers with morphologically significant re-organization at the cellular level…….

Title: A new four product skin care regimen for the treatment of intrinsic and extrinsic aging

Objective: Customers combine many cosmeceutical products to regain their youthful look, even though they have not been tested together. Thus we designed a 4-product regimen which is complementary in its composition, synergistically addressing many aspects of skin aging. Although the regimen did not contain any UV filters, it contained a unique blend of botanicals which confers unexpected protection against UV-induced oxidative stress and DNA damage…..

TrueScience™ Facial Cream with Advanced Nrf2 Technology has been shown to:

- Increase Nrf2 Protein amount, thus improve resistance to oxidative stress
- Boost skin protection from UV exposure by reducing DNA damage
- Fight the signs of aging though all layers of the skin

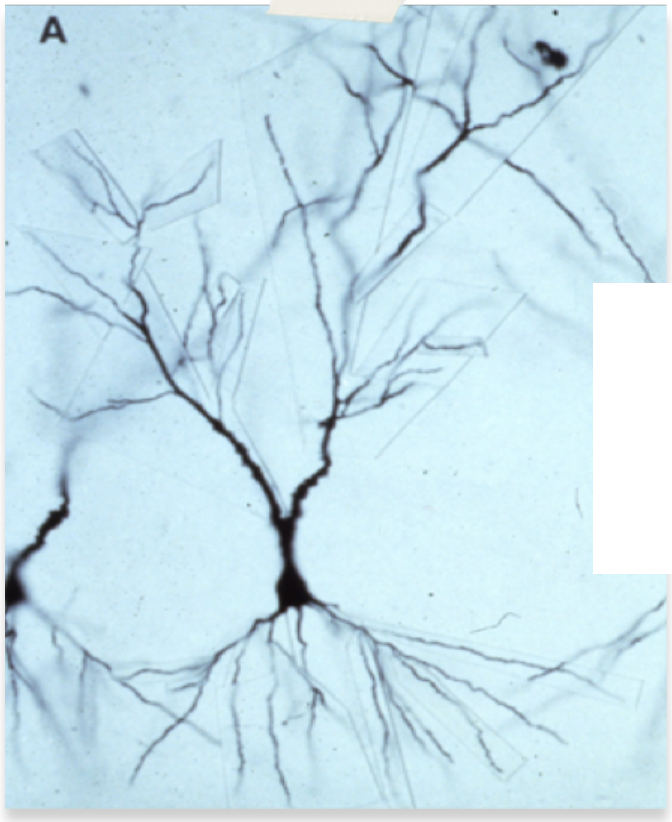
Shaving - Results

- Irritation Reduced 32%
- Barrier Function Improved 28%
- High Response rate (85%-100%)
- Good for Guys! (Bulletproof Skin)

PERFORM Your Best…

Tired, Stressed, Depressed… “Off”

NEURONAL ATROPHY



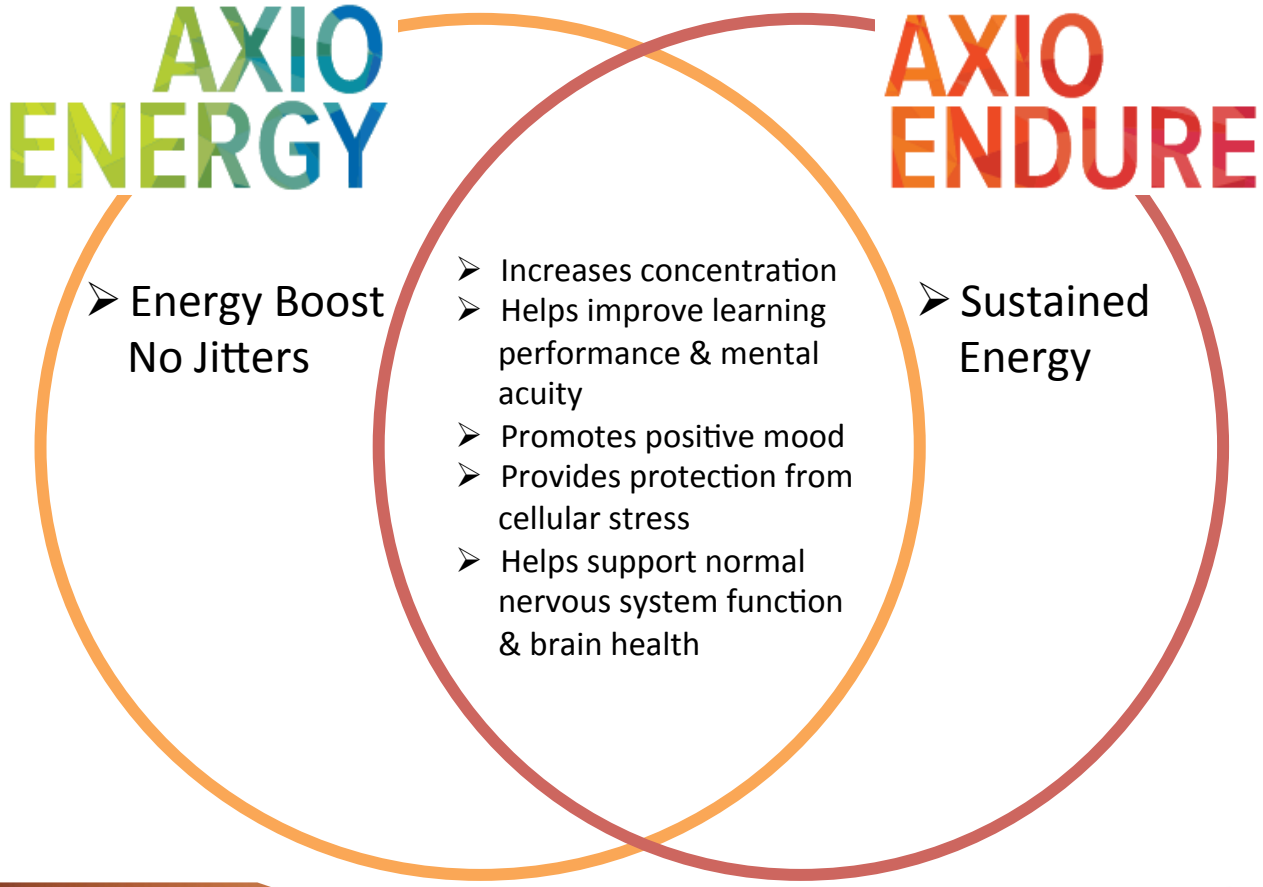
NORMAL STRESS

Healthy, Large, Many Projections, Optimal Function

HIGH STRESS

Small, Thin, Disrupted, Structural Damage, Poor Function


ADDERALL XR
Lexapro
Folgers
PROZAC
STARBUCKS COFFEE
Ritalin-SR
PROVIGIL (MODAFINIL) Tablets
Celexa
Vyvanse
MONSTER ENERGY
Lunesta
$100B+
ZAXL
Red Bull
ZOLOFT
Wellbutrin XL
EFFEXOR XR
ROCKSTAR ENERGY DRINK
strattera atomoxetine HCl
AMBIEN
CONCERTA
Luvox
Cymbalta
LifeVantage | ELITE ACADEMY
Peet's Coffee & Tea
DUNKIN' DONUTS


AXIO ENERGY
AXIO ENDURE
Energy Boost
No Jitters
Increases concentration
Helps improve learning performance & mental acuity
Promotes positive mood
Provides protection from cellular stress
Helps support normal nervous system function & brain health
Sustained Energy

Enhanced Nrf2 Technology

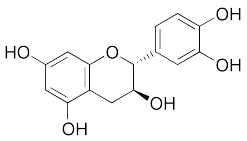
New Zealand Pine Bark, Green Tea, Quercetin	• Nrf2 activators. • Help protect against cellular stress.

Additional Ingredients

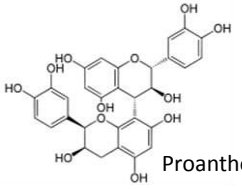
Suntheanine (L-theanine)	• Helps promote a state of alertness without the jitters. • Helps improve learning performance, focus, & mental acuity.
Magnesium	• Helps support normal nervous system function & brain health. • Promotes healthy energy metabolism.
B Vitamins	• Helps maintain normal cellular function. • Helps promote a positive mood. • Helps support optimal working memory. • Helps reduce fatigue and promotes healthier energy.
***Caffeine**	• Helps promote alertness, mental clarity, & sense of energy.
***DMAE**	• Helps support normal brain & nervous system function. • Helps optimize memory & attention.

*Ingredients only found in Axio *Energy*

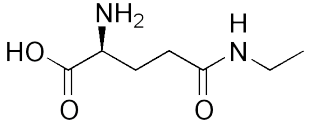
With Natural Flavors, Sweetener and Color



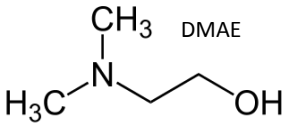
Catechin



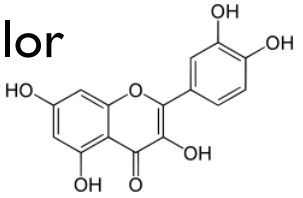
Proanthocyanidin



L-Theanine



DMAE

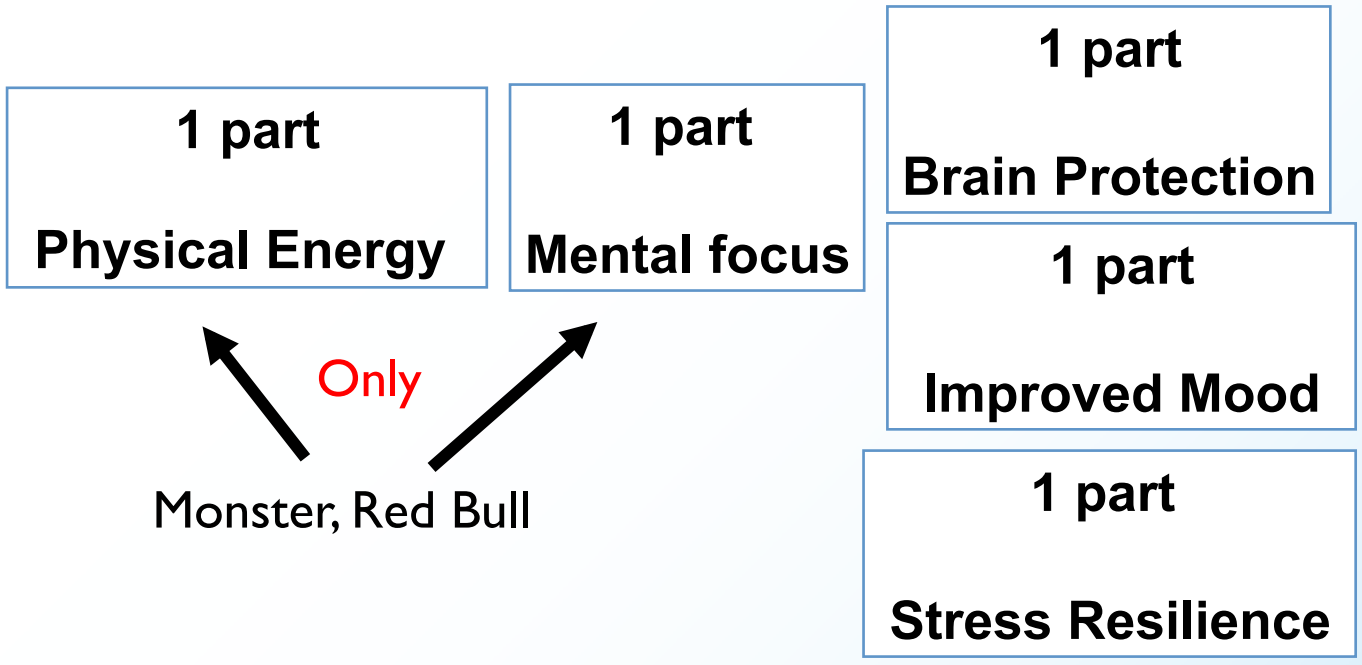


Quercetin

LifeVantage | ELITE ACADEMY

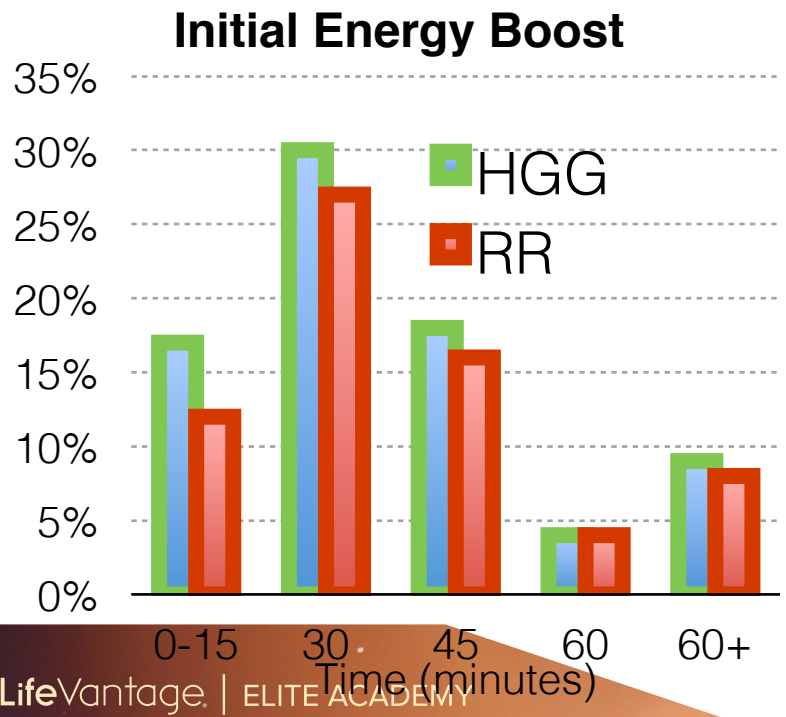
LifeVantage IMAGINE

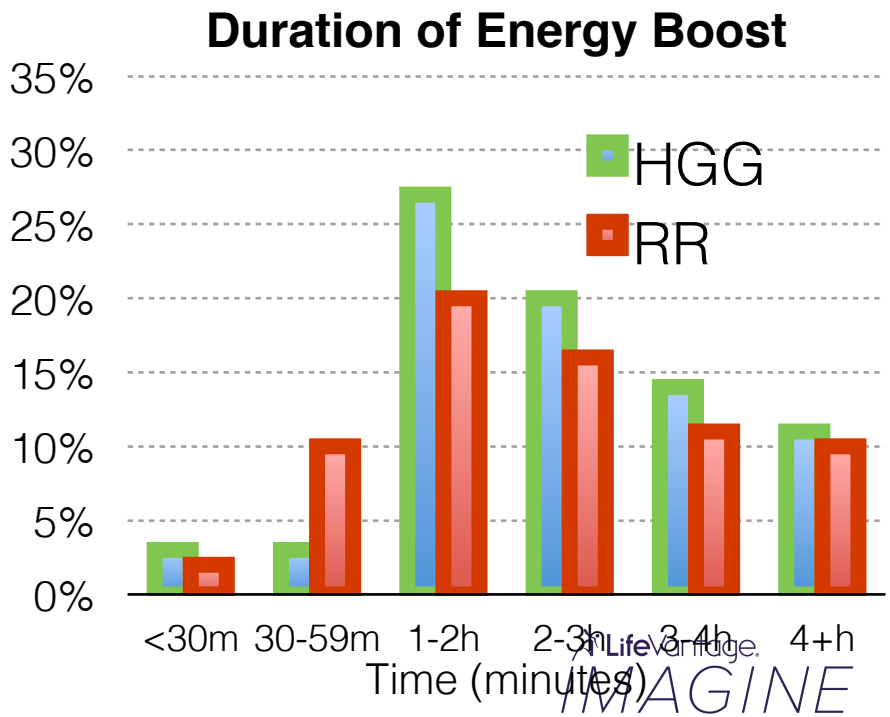
Axio :
"Multi-Dimensional" Smart Energy



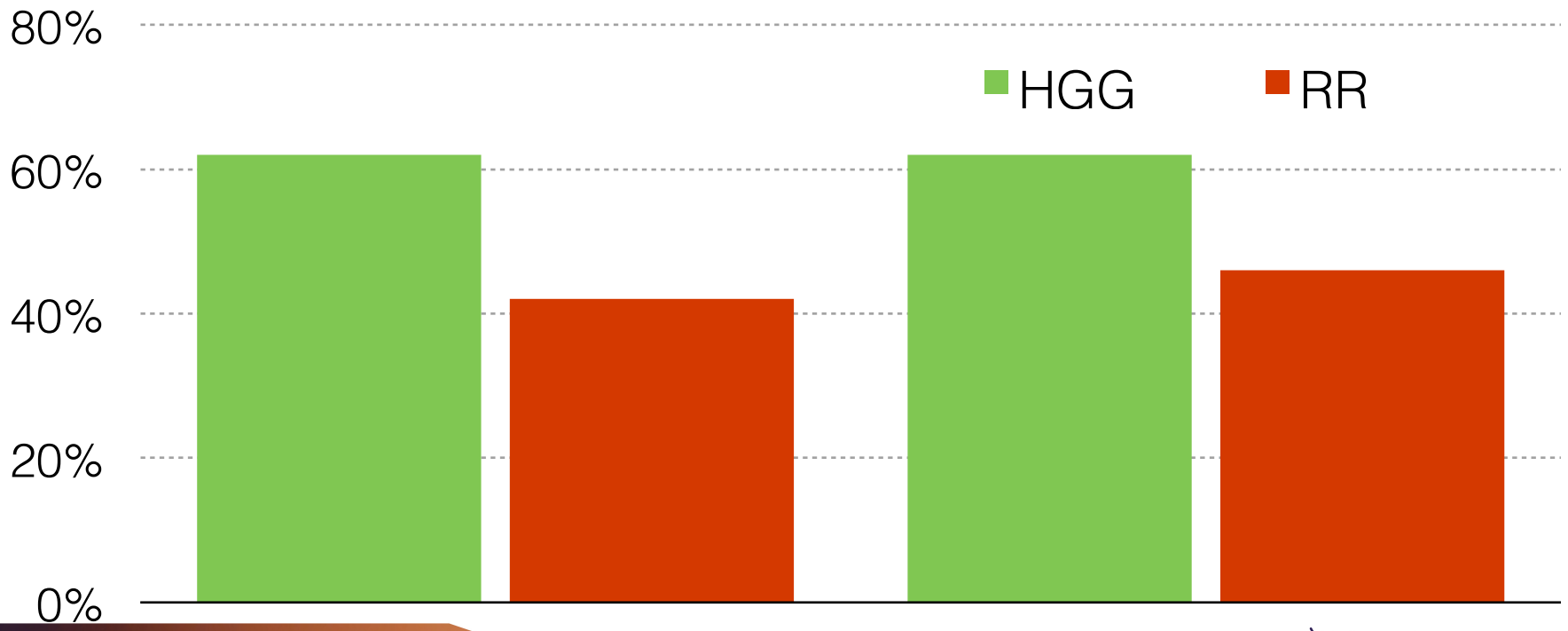
LifeVantage FREEDOM

Axio Usage Survey





Axio Usage Survey



Axio Usage Survey

- "It felt like a morning cup of coffee with the energy it gave me, but more than that it **improved my focus.**"
- "I liked the energy that it gave me, I would say it lasted pretty good maybe **4 or 5 hours.**"
- "I was pleasantly surprised at this product's ability to **keep me energized, awake and focused** without harmful stimulants and **without feeling nervous, jittery or having rapid heart rate.** I would take this over caffeine any day."
- "It was a very subtle transition to having energy, just like I **naturally** had the energy. It was a good amount of energy too. **Not too wired,** not too draggy. **The perfect amount.** I didn't feel like it wore off halfway through the day or that I needed more energy. I also did not have a difficult time falling asleep at night because of it. I would **definitely buy this** instead of many other energy drinks or supplements."

LifeVantage
ASCEND
ELITE ACADEMY

LifeVantage | ELITE ACADEMY

LifeVantage IMAGINE

DEADLY
ANTIOXIDANTS

Why Your Daily Vitamins May Be Causing Cancer and Shortening Your Life and How Nrf2 Can Turn on Your Body's Own Antioxidants for Optimal Health

SHAWN TALBOTT, PH.D.

LifeVantage | ELITE ACADEMY

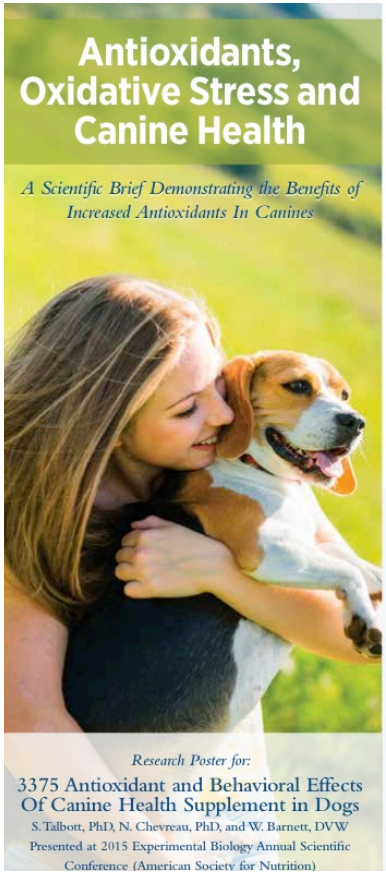
BROCHURE
COMBO PACK

25 - The Cancer Breakthrough
25 - The Nervous System Breakthrough
25 - The Cardiovascular Breakthrough
25 - The Skin Health Breakthrough
25 - The Canine Breakthrough

LifeVantage IMAGINE

LifeVantage Lab Series

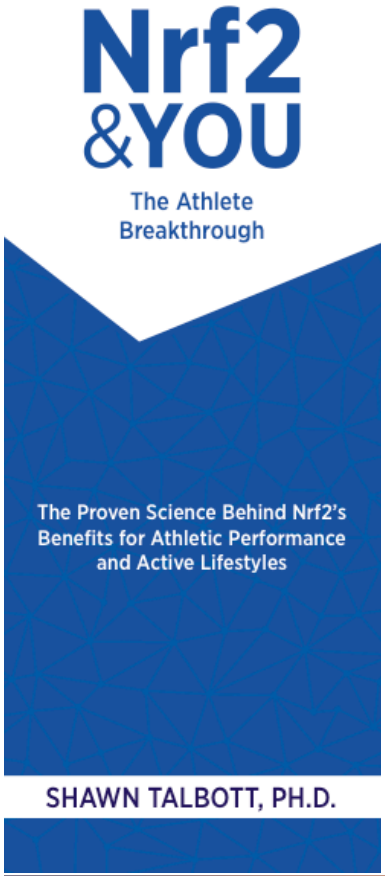
- NEW Episode 1
  - Product Overview w/Axio
- NEW Episode 7
  - Scientific Advisory Board
- LifeVantage LIVE! webinars
  - March 4 (Nrf2 Science)
  - April 22 (Protandim/CH)
  - May 6 (Nrf2 & Skin)
    - LifeVantage.com/Live/



Antioxidant and Behavioral Effects of Canine Health Supplement in Dogs

Conclusions

Dietary supplementation of dogs for 60-days with Canine Health resulted in a significant improvement in overall owner perception of pet behavior, as well as notable trends for an increase in catalase, a reduction in TBARs, and improved cognitive function.



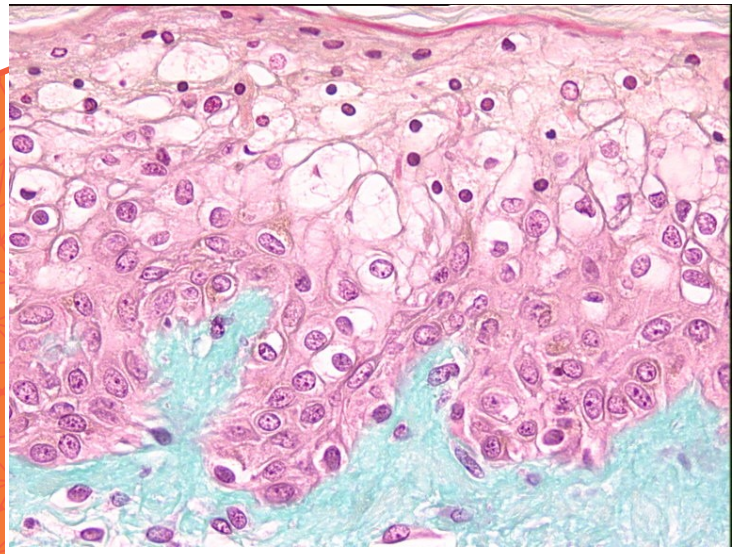
Mitochondrial Biogenesis in Response to Exercise or Hydrogen Peroxide Treatment Is Not Blunted by Upregulation of Endogenous Antioxidants

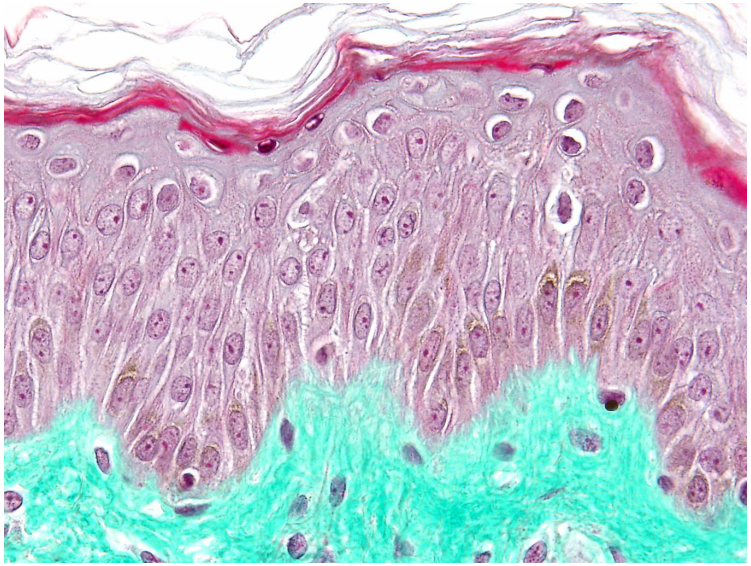
Major Findings:

- Vitamin C supplements *reduced* cellular adaptations to exercise training
- Protandim supplementation allowed normal post-exercise cellular adaptations

Nrf2 &YOU

The Skin Health Breakthrough





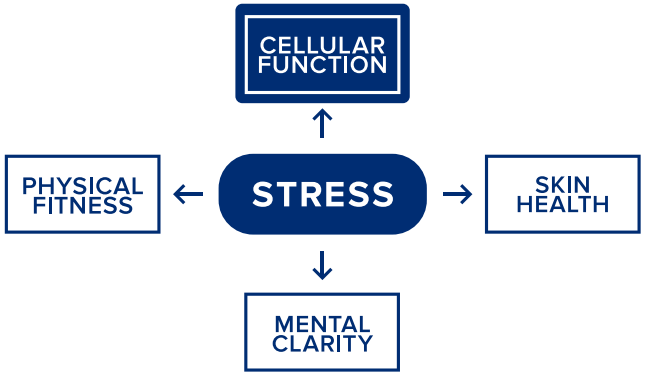
The Proven Science Behind Nrf2's Skin-Protecting Benefits

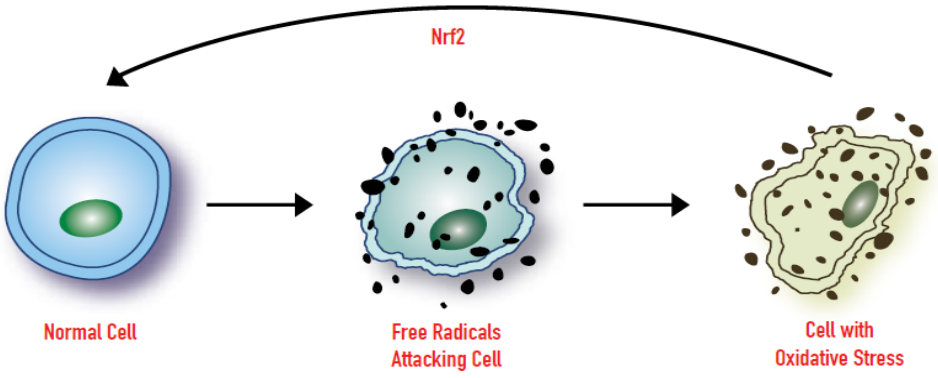
SHAWN TALBOTT, PH.D.

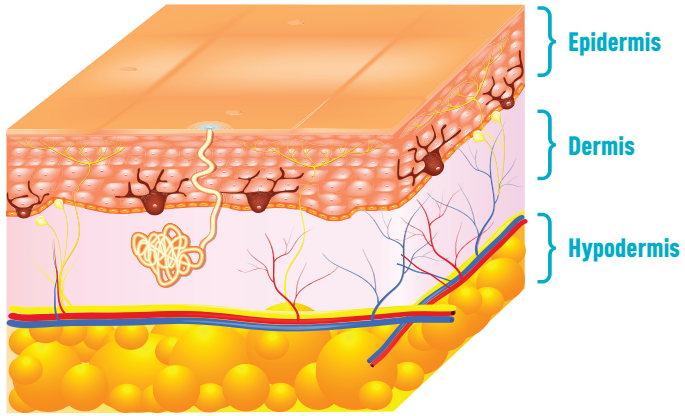
LifeVantage | ELITE ACADEMY

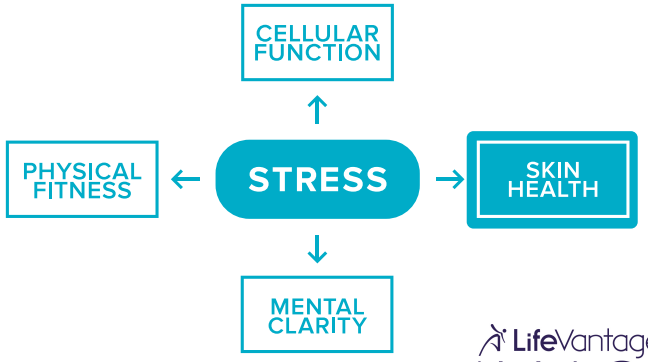
LifeVantage IMAGINE


LifeVantage
PROTANDIM
the Nrf2 Synergizer


CELLULAR FUNCTION
PHYSICAL FITNESS
STRESS
SKIN HEALTH
MENTAL CLARITY


Nrf2
Normal Cell
Free Radicals Attacking Cell
Cell with Oxidative Stress





LifeVantage IMAGINE

Nrf2Science

LifeVantage | ELITE ACADEMY

LifeVantage IMAGINE

LifeVantage Value Proposition

Unmatched opportunity to build an independent health business