Shawn M. Talbott, PhD

CNS, LDN, FACSM, FAIS, FACN

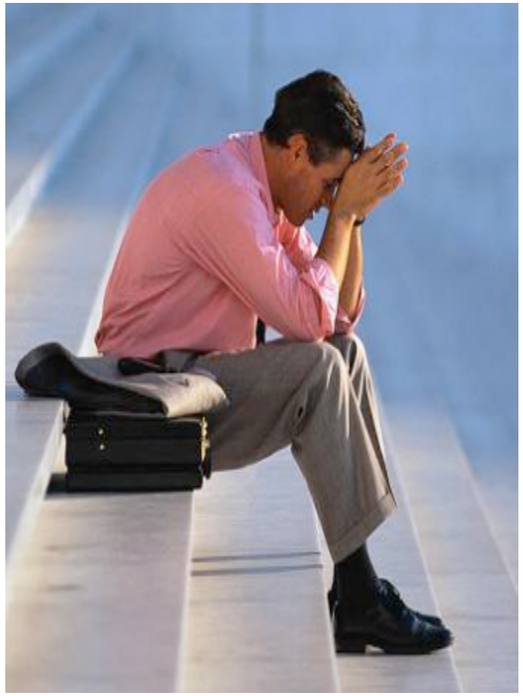
Chief Science Officer

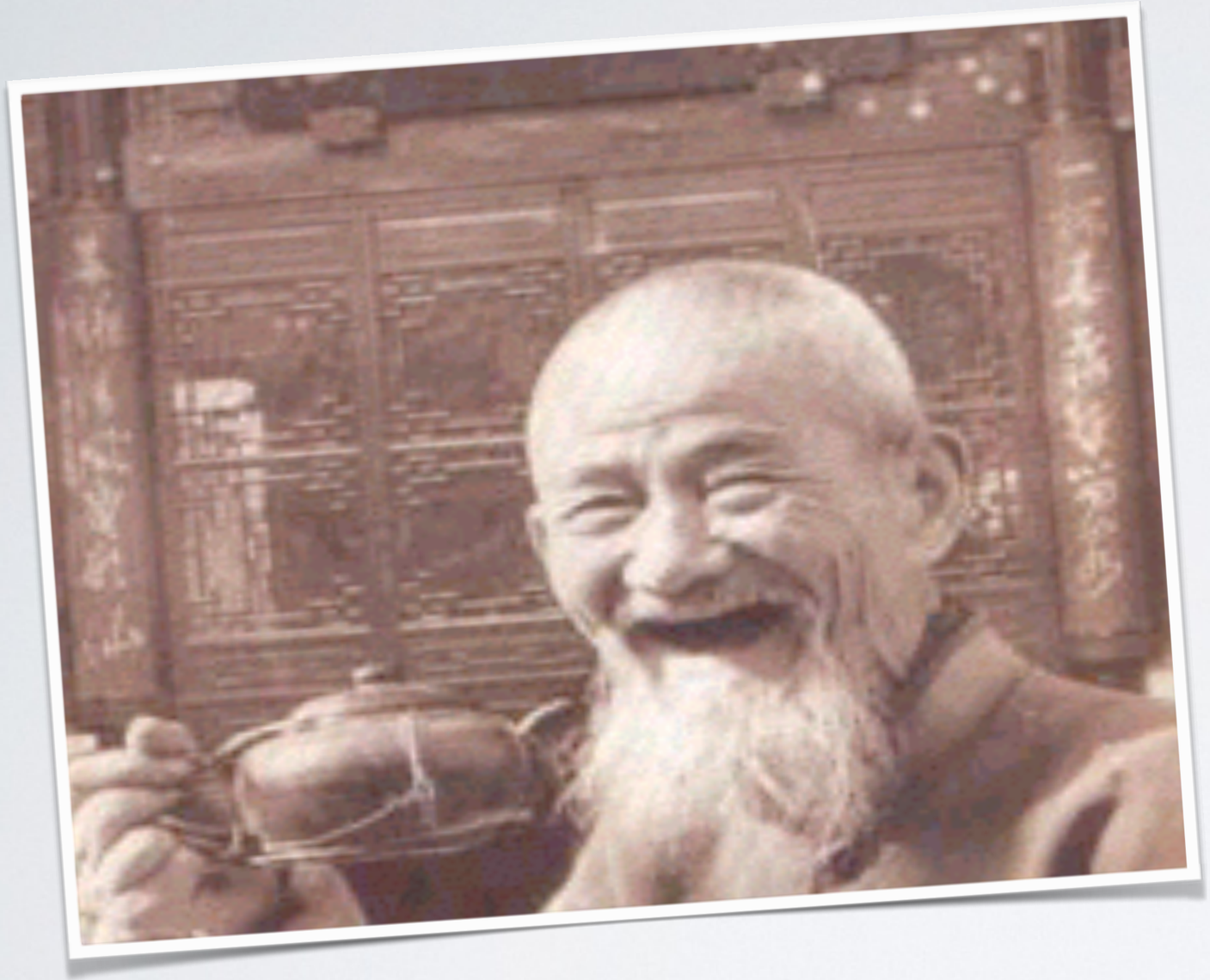
LifeVantage.
FREEDOM

Causes of "Imbalance" (Stress)

- Emotional stress (deadlines, bills, traffic…)
- Physical stress (aging, sleep deprivation, exercise…)
- Environmental stress (air/water pollution, heat, cold…)
- Non-Optimal Diet (processed foods, inadequate nutrients/phytonutrients…)

- Athletes / Dieters / Short-Sleepers / Stressed
  - Share the SAME *biochemical* disruptions
  - Share the SAME *psychological* outcomes
  - Exhibit the SAME benefits to *restored biochemical balance*





Zone

Prana

Mood

Qi

Mana

Swing

Energy

Focus

Vigor

Ki

Flow

Edge

Motivation

Runner's High

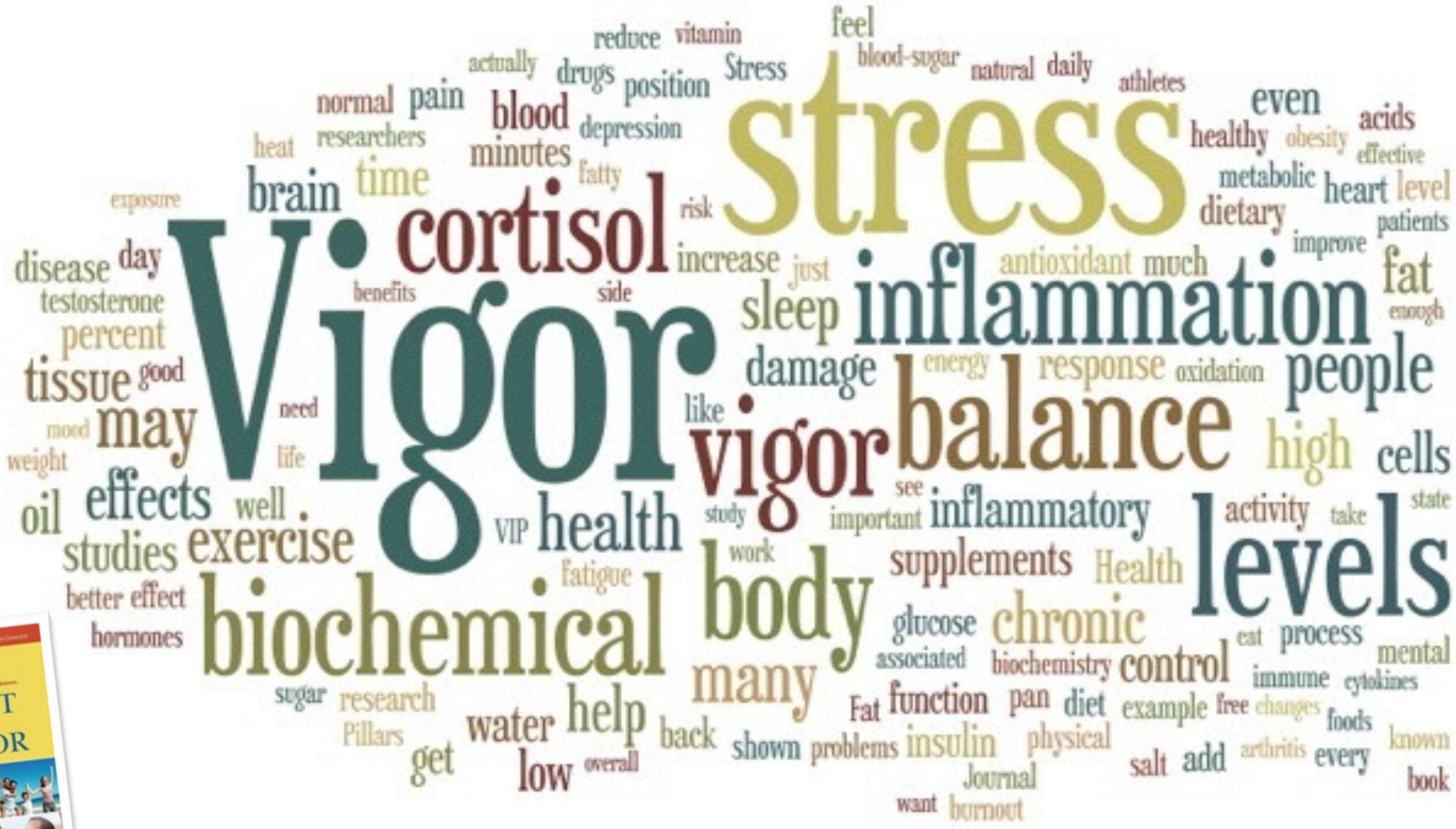
Vigor

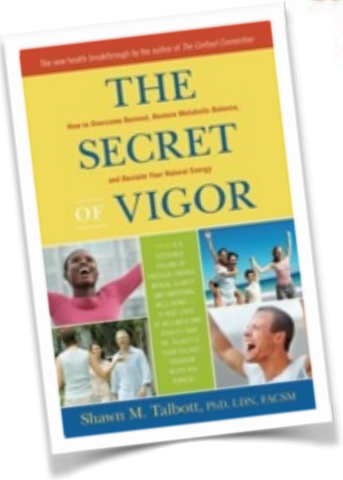
3-tiered mood state…
characterized by:

Physical Energy

Mental Acuity

Emotional Well-Being


Vigor
stress
cortisol
inflammation
balance
vigor
levels
biochemical
body
health
exercise
effects
may
people
high
cells
fat
sleep
damage
response
oxidation
energy
inflammatory
activity
supplements
Health
chronic
control
process
mental
immune
cytokines
many
help
water
low
get
back
shown
problems
insulin
physical
salt
add
arthritis
every
known
book
Journal
burnout
want
Fat
function
pan
diet
example
free
changes
foods
glucose
associated
biochemistry
eat
research
Pillars
sugar
better
effect
hormones
fatigue
work
VIP
study
important
see
state
take
oil
studies
well
tissue
good
percent
testosterone
disease
day
mood
weight
need
life
benefits
side
increase
just
antioxidant
much
improve
patients
level
heart
metabolic
dietary
healthy
obesity
effective
acids
even
athletes
natural
daily
blood-sugar
feel
Stress
position
drugs
actually
reduce
vitamin
normal
pain
blood
depression
minutes
fatty
risk
heat
researchers
time
brain
exposure
enough
overall
every
book

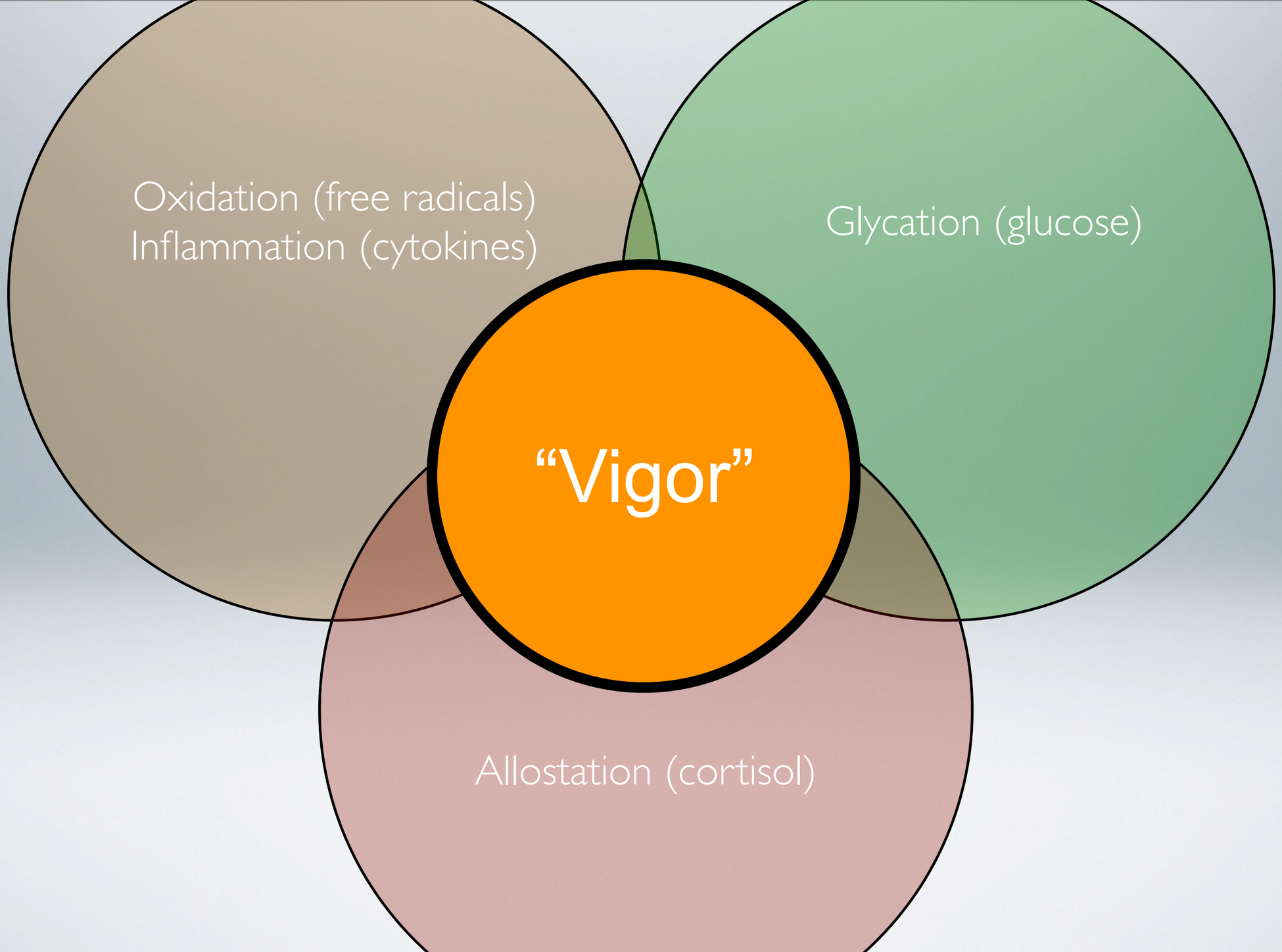

THE
SECRET
OF VIGOR
Shawn M. Talbott, PhD, LDN, FACSM

What does

Energy

mean to

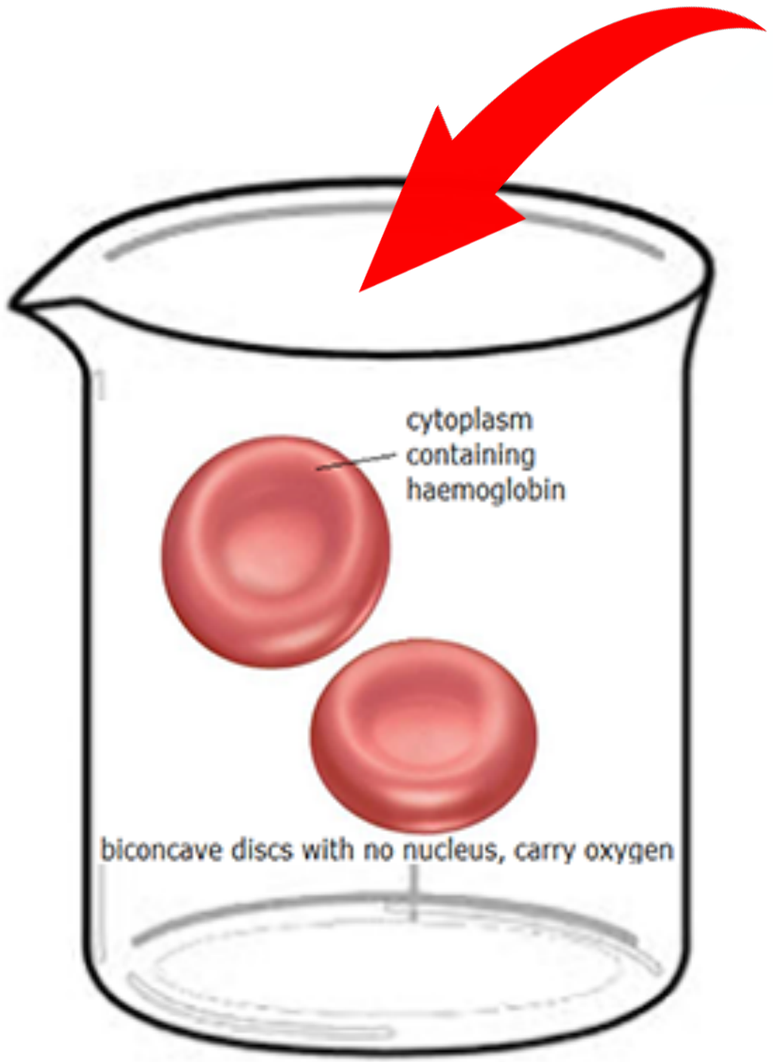
YOU?


Oxidation (free radicals)
Inflammation (cytokines)
Glycation (glucose)
“Vigor”
Allostation (cortisol)

Just an Antioxidant?

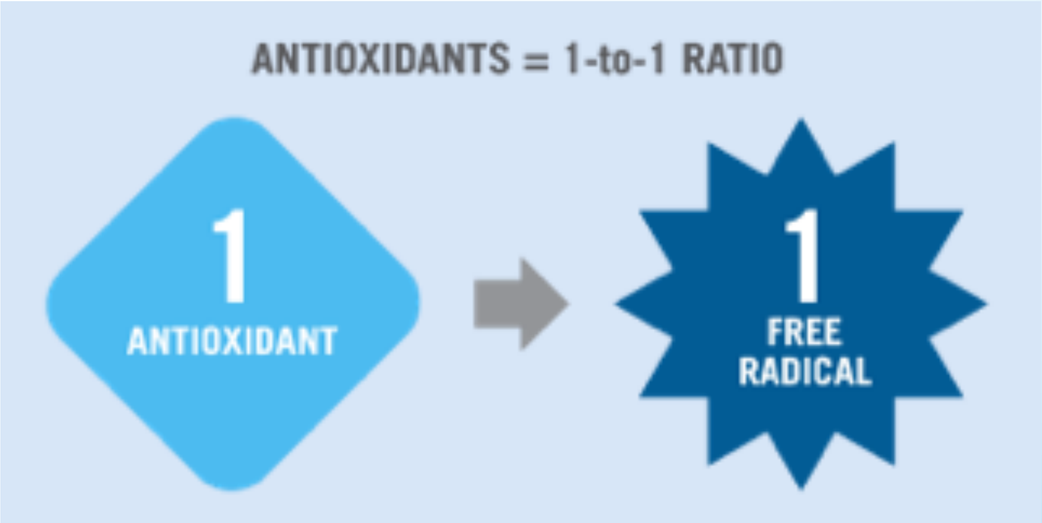
LifeVantage
FREEDOM

CAP-e = Cell-based Antioxidant Protection in Erythrocytes
ORAC = Oxygen Radical Absorbance Capacity



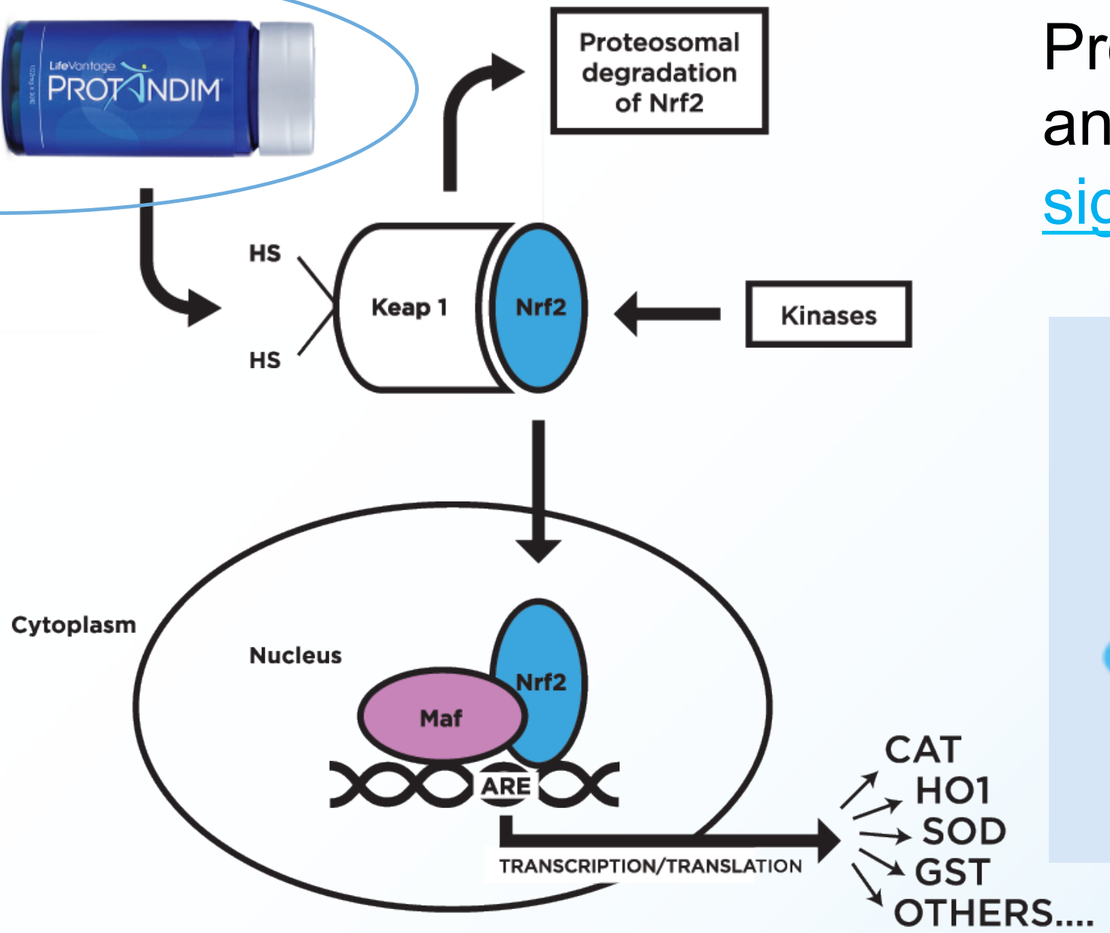
Add anti-oxidants to the RBC in beaker

- Let the anti-oxidant diffuse into the RBC
- Measure how oxidants are neutralized
- → OLD TECHNOLOGY

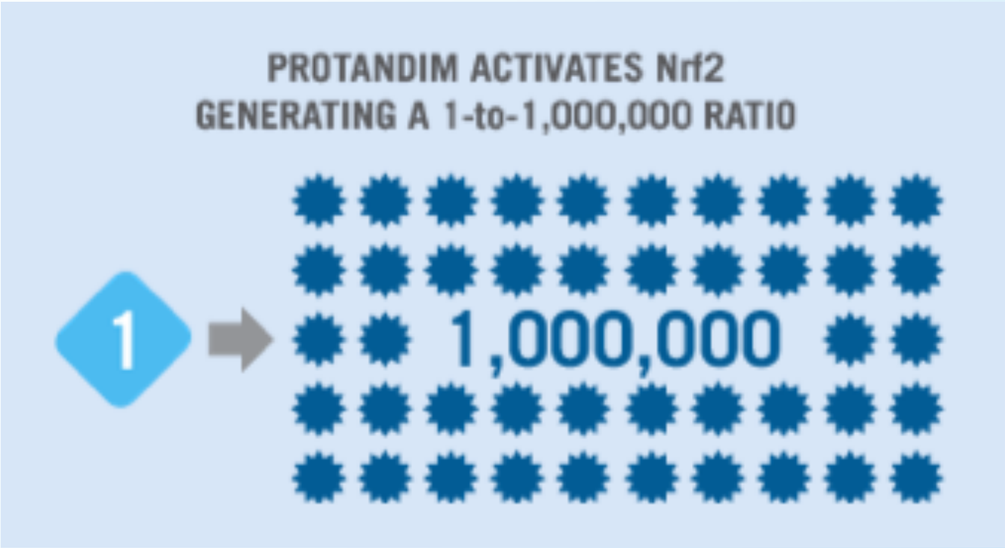


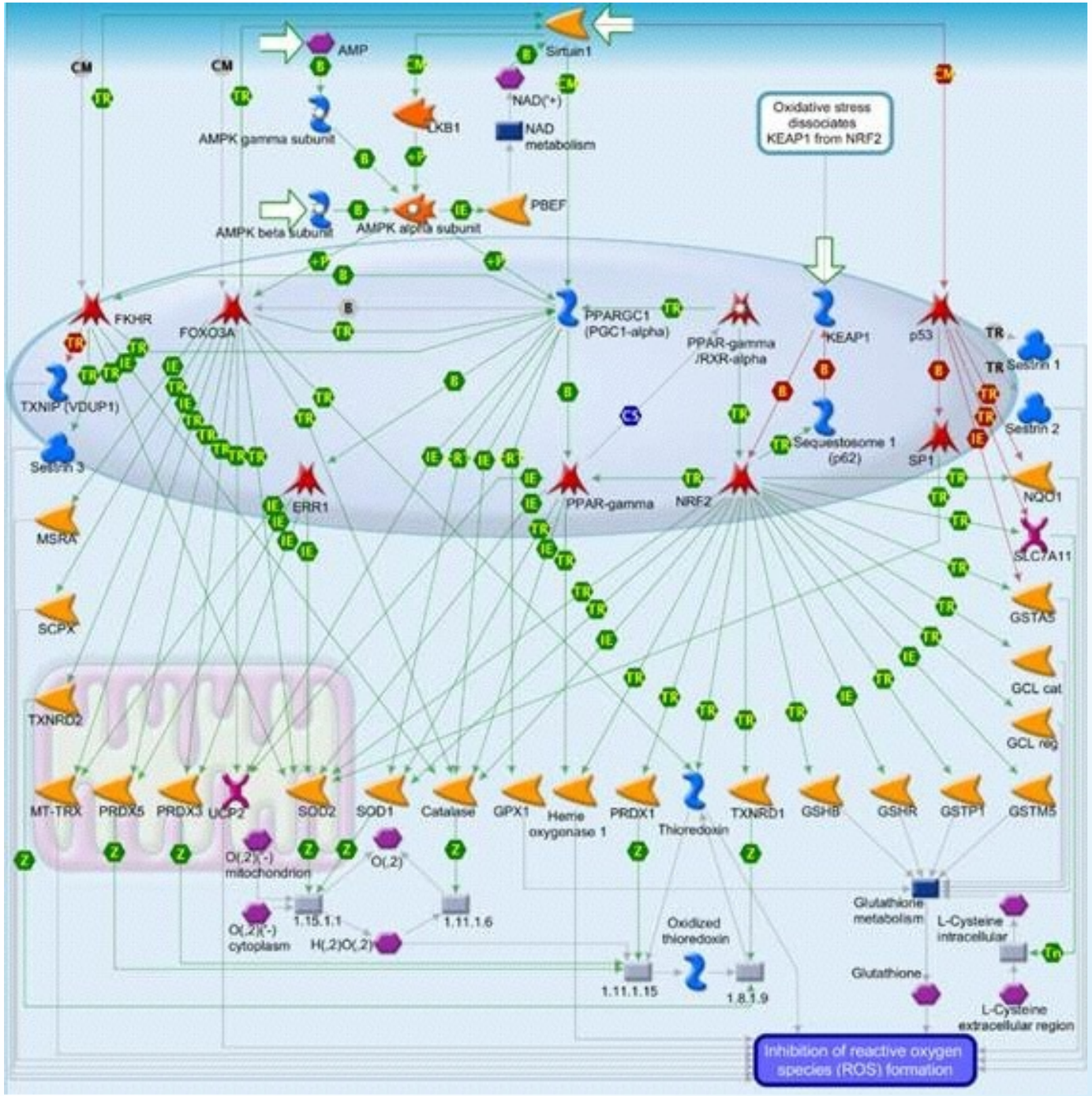
Protandim is the New Way to deal with oxidative stress via Nrf2 pathway and expression of anti-oxidant enzymes

Signaling molecule



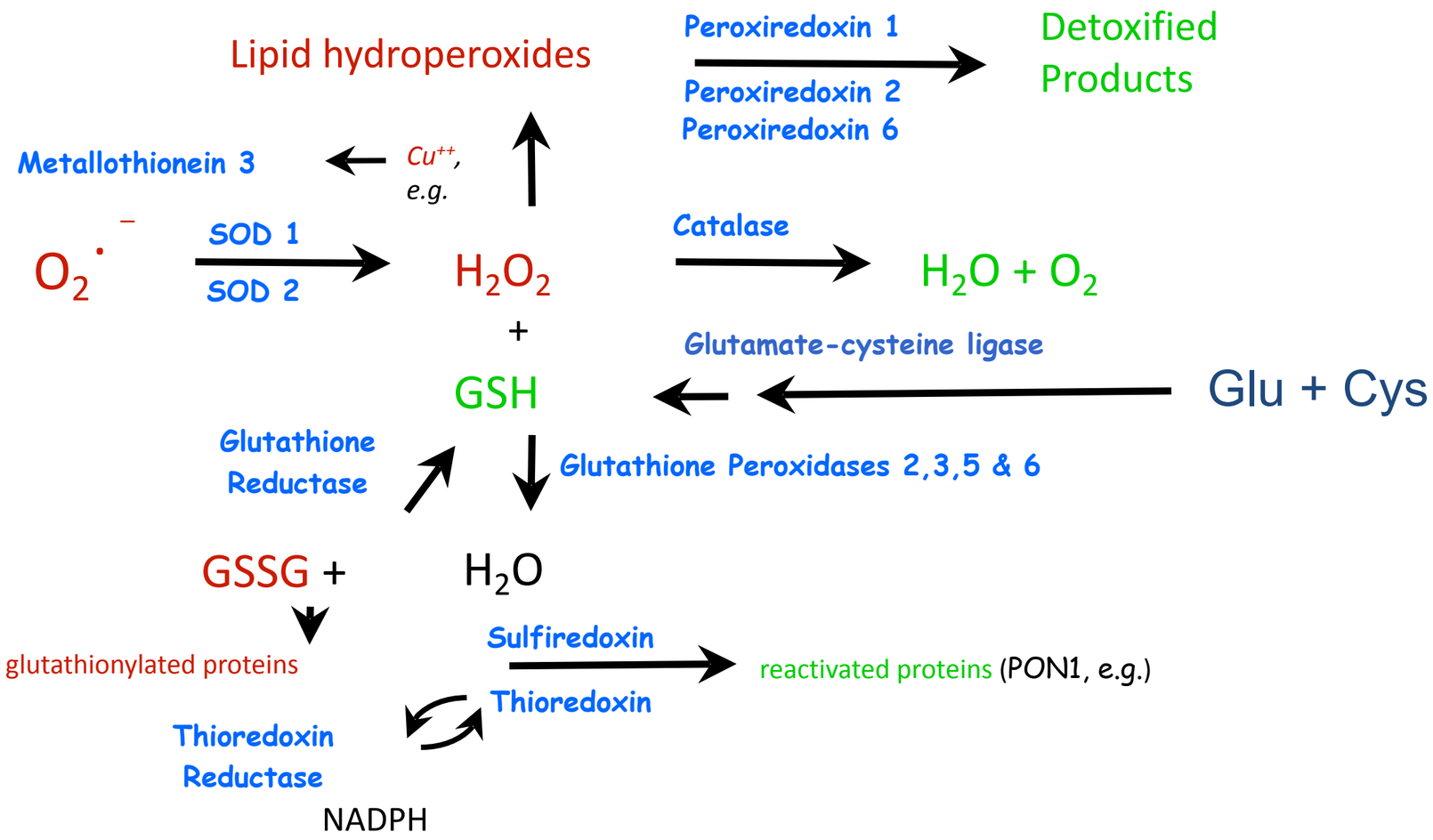
Protandim is NOT an antioxidant but acts as a signaling molecule




AMP
Sirtuin1
NAD(+)
NAD metabolism
LKB1
AMPK gamma subunit
AMPK beta subunit
AMPK alpha subunit
PBEF
Oxidative stress dissociates KEAP1 from NRF2
FKHR
FOXO3A
PPARGC1 (PGC1-alpha)
PPAR-gamma /RXR-alpha
KEAP1
p53
Sestrin 1
Sestrin 2
TXNIP (VDUP1)
Sequestosome 1 (p62)
SP1
Sestrin 3
ERR1
PPAR-gamma
NRF2
NQO1
MSRA
SLC7A11
SCPX
GSTA5
GCL cat
TXNRD2
GCL reg
MT-TRX
PRDX5
PRDX3
UCP2
SOD2
SOD1
Catalase
GPX1
Heme oxygenase 1
PRDX1
Thioredoxin
TXNRD1
GSHB
GSHR
GSTP1
GSTM5
O(.2)(-) mitochondrion
O(.2)
1.15.1.1
1.11.1.6
O(.2)(-) cytoplasm
H(.2)O(.2)
Oxidized thioredoxin
1.11.1.15
1.8.1.9
Glutathione metabolism
L-Cysteine intracellular
Glutathione
L-Cysteine extracellular region
Inhibition of reactive oxygen species (ROS) formation

The Internal System of Protective Antioxidant Enzymes

Activated/Triggered by Nr2 Pathway



Circulation
JOURNAL OF THE AMERICAN HEART ASSOCIATION
Heart Failure

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

Hans J. Bossard, MD, PhD; Ramesh Natarajan, PhD; Scott C. Henderson, PhD;
Carlin

American H
Associa
Learn

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*]
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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.

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journal homepage: www.elsevier.com/locate/freeradbiomed

Original Contribution

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

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Synergy
Curcumin
Protandim

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SCIENCE DIRECT
Free Radical Biology & Medicine 40 (2006) 341 – 347
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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,*]
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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

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Protandim attenuates intimal ex vivo via a catalase-depend

Binata Joddar [a,b,c], Rashmeet K. Reen [b], Jay L. Zweier [b], Keith J. Gooch [a,b,*]
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Catalase
Human saphenous veins
Ex vivo culture
Protandim

The Dietary Supplem Plasma Osteopontin a Oxidative Stress in Mus

Muhammad Mudd
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

ABSTRACT. Therapeutic options for Duchenne muscular dystrophy (DMD), t
common and lethal neuromuscular disorder in children, remain elusive. O
damage is implicated as a pertinent factor involved in its pathogenesis. Protan
an over-the-counter supplement with the ability to induce antioxidant enzymes

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Serum Levels of Thiobarbituric Acid Reactive Substances Predict Cardiovascular Events in Patients With Stable Coronary Artery Disease

A Longitudinal Analysis of the PREVENT Study

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Gregory M. Preston, PhD,§ Jan Buch, MD,‖ R. Preston Mason, PhD*†
Beverly and Boston, Massachusetts; New York, New York; and Groton, Connecticut

patency. To evaluate the role of reactive oxygen species (ROS) signaling in intima hyperplasia (IH), an early
stage pathology of vein-graft disease, and to explore the potential therapeutic effects of up-regulating
endogenous antio
model of HSV IH.
~3.6-fold increase
Protandim, a nut
enzymes in sever
isolated HSV. Pro
respectively, and
catalase activity b
and proliferation.
cultured HSV and

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[3], Jianfeng Liu[1], Fei Wang[3], Jacqulyne Ponville[4], Joe M. McCord[5], Yunfeng Zhao[1*]
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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.

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

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(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 Vers
Due to Endotoxin," *Circul. Shock*,
Barbosa, et al., "Decreased Oxidati
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.

ORIGINAL CONTRIBUTION

Vitamin E and the Risk of Prostate Cancer

The Selenium and Vitamin E Cancer Prevention Trial (SELECT)

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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 c
Even men who choose activ
lance as an initial managem
egy face anxiety, uncertain p
and a measurable risk of sepsi
low-up biopsies,[3] and more
third of those who initially del
are ultimately treated.[4,5] Wi

Author Video Interview ava
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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 retinyl 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 placel
tically significant differen
cancer. In the active-trea
death from any cause w
interval, 1.03 to 1.33); of c
percent confidence inter
from cardiovascular disea
interval, 0.99 to 1.61). On
randomized trial was st
planned; follow-up will co

Conclusions. After an
plementation, the combin
min A had no benefit and
on the incidence of lung c
from lung cancer, cardiov
in smokers and workers
Med 1996;334:1150-5.)
©1996, Massachusetts Medical

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.[6-9] The Beta-Carotene and Retinol Efficacy Trial (CARET) is one of several recent trials to assess the chemopreventive efficac
and related agents.[10-13]

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

Study Design

The study's strategy, desig
study findings, and recruitmen
where.[10,14,15] 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 day
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
into a single group receiving a standard daily regimen of
beta carotene plus 25,000 IU of retinol in the form of retin
tate. Thus, in the pilot study with the cohort of smokers, t
jects were assigned to active treatment for every subject as
placebo; therefore, the rates rather than numbers of end po
be compared between active and placebo groups. The desig
for active intervention until late 1997 (110,000 person-years)
porting of results in 1998.

Eligibility, Recruitment, and Randomization

Workers exposed to asbestos were men 45 to 74 years o
the pilot study and 45 to 69 years of age in the later peri

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.K.). Address reprint requests to Dr. Omenn at the Fred Hutchinson Cancer Research Center, Division of Public Health Sciences, 1124 Columbia—MP939, Seattle, WA 98104.

Supported by grants (U01 CA56073, U01 CA56074, U01 CA47989, U01 CA48200, U01 CA48203, U01 CA48196, and U01 CA52996) 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
suggest that
of vitamin E
other foods
precursor o
dark-green,
the risk of c
ings of th
Prevention
lung cancer
who receive
were recent
ficacy Trial
carotene an
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or more c
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(median, 6.
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= 894) were
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The Journal of Nutrition
Nutritional Epidemiology

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

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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 25 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 = 0.69; $P = 0.11$). 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: 2099–2105, 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 ra
cutaneous system has a very efficient interlinked
defense system for counteracting UV-induced oxi
However, excessive exposure to sunlight or other u
light can overwhelm the skin's antioxidant capacity. A potentially interesting strategy for preventing UV exposure damage 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 CHANEL.

[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.

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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

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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

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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.[4,5] Sixty-six percent of women participating in the Iowa Women's Health Study[3] 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.[3] At the population level, dietary supplements contributed substantially to the total intake of several nutrients, particularly in elderly individuals.[1,2]

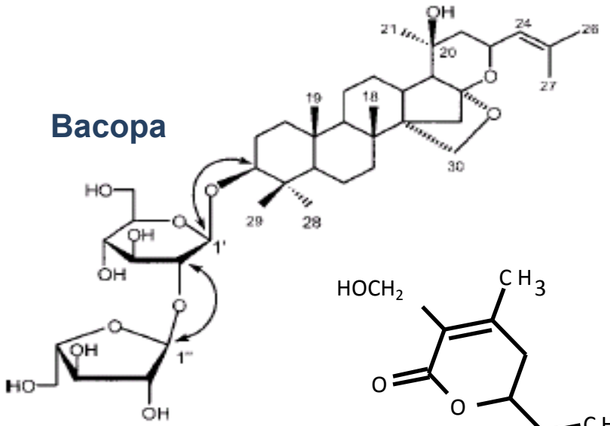
Supplemental nutrient intake clearly is beneficial in deficiency conditions.[6] However, in well-nourished populations, supplements often are intended to yield benefit by preventing chronic diseases. Results of epidemiologic studies[7-9] assessing supplement use and total mortality risk have been inconsistent. Several randomized controlled trials (RCTs),[10,11] concentrating mainly on calcium and vitamins B, C, D, and E, have not shown beneficial effects of dietary supplements on total mortality rate; in contrast, some[12,13] have suggested the possibility of harm. Meta-analyses[14,15] concur in finding no decreased risk and potential harm. Supplements are widely used, and further studies regarding their health effects are needed. Also, little is known about the long-term effects of multivitamin use and less commonly used supplements, such as iron and other minerals.

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

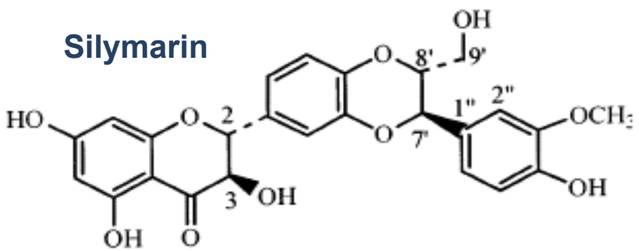
Author Affiliations: Department of Health Sciences, Institute of Public Health and Clinical Nutrition, University of Eastern Finland, Kuopio Campus, Kuopio, Finland (Dr Mursu); Division of Epidemiology and Community Health, School of Public Health, University of Minnesota, Minneapolis (Drs Mursu, Robien, 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).

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

Bacopa



Silymarin



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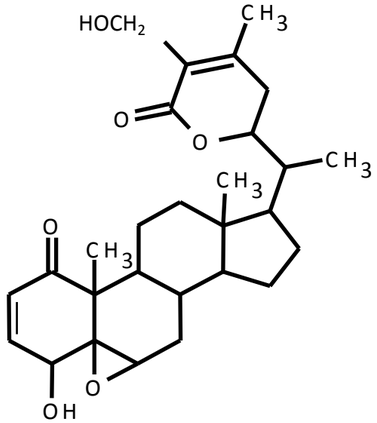
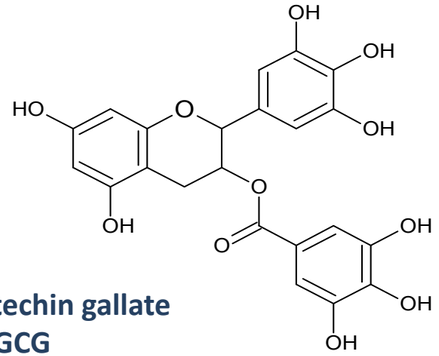
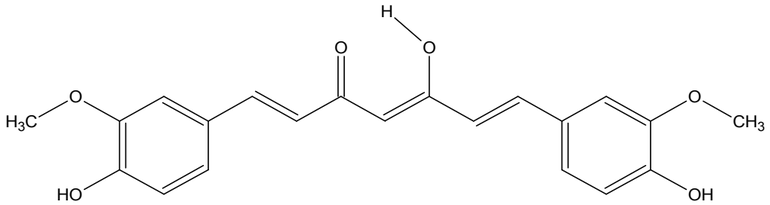
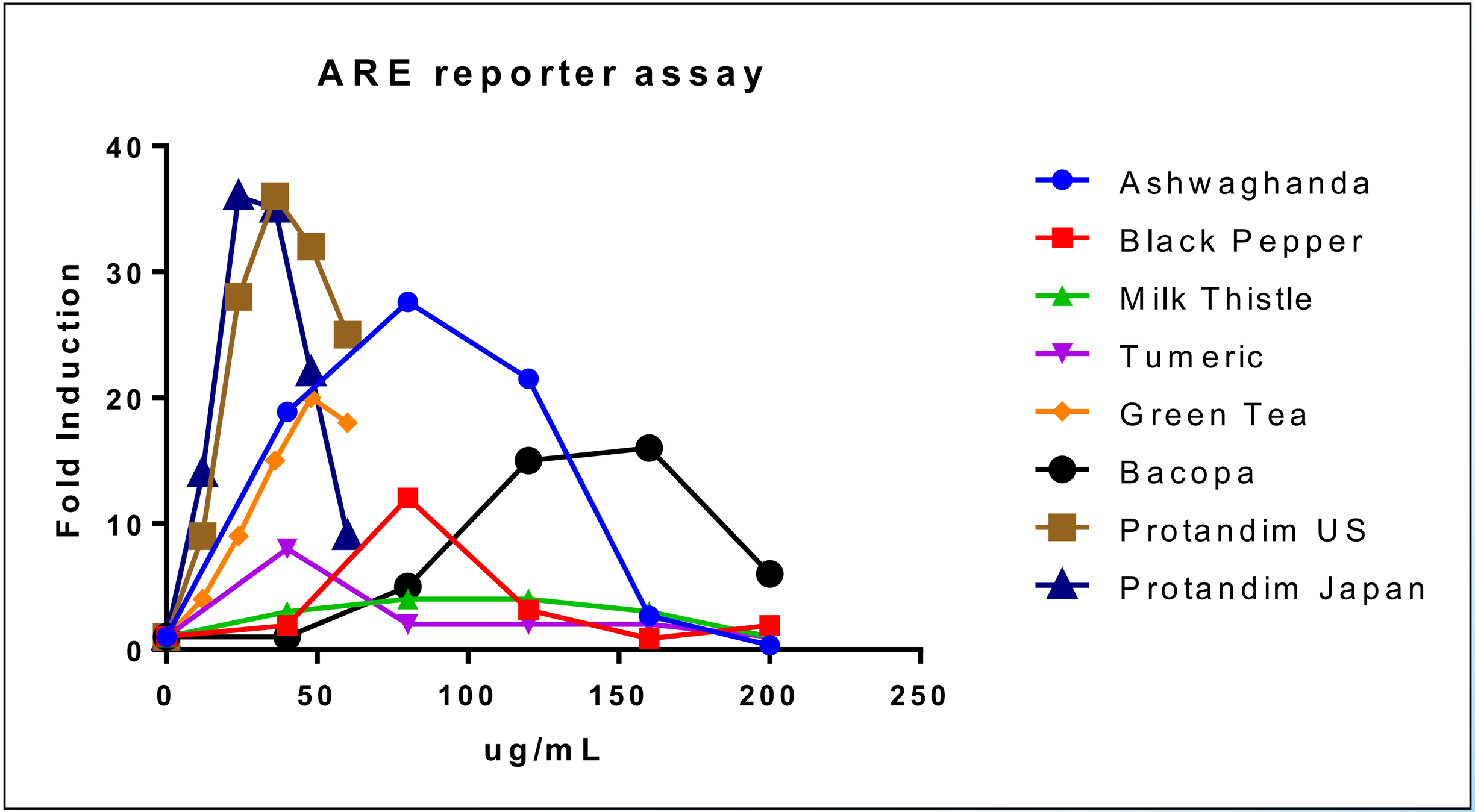


Epigallocatechin gallate
EGCG



Curcumin




ARE reporter assay
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40
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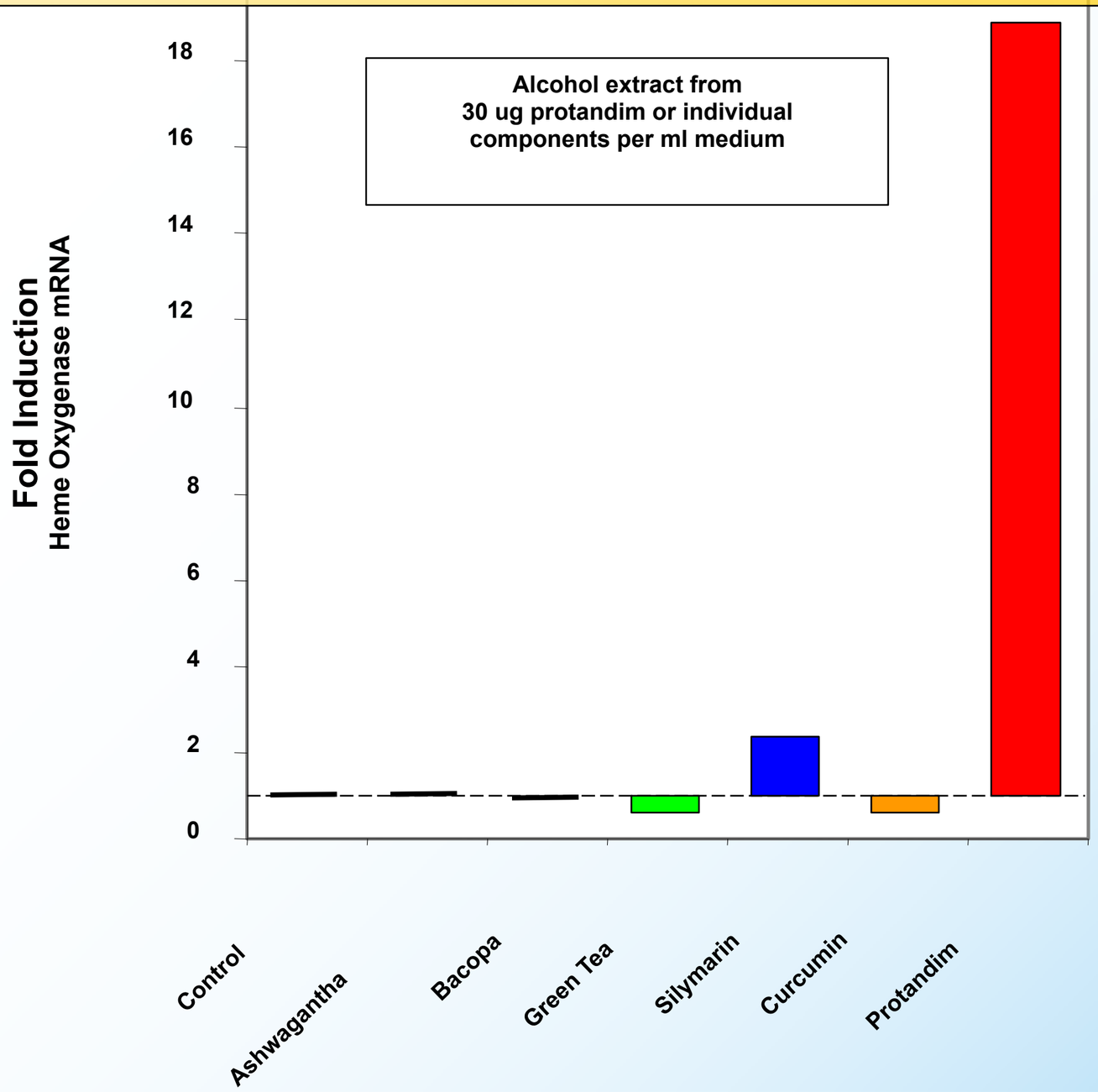
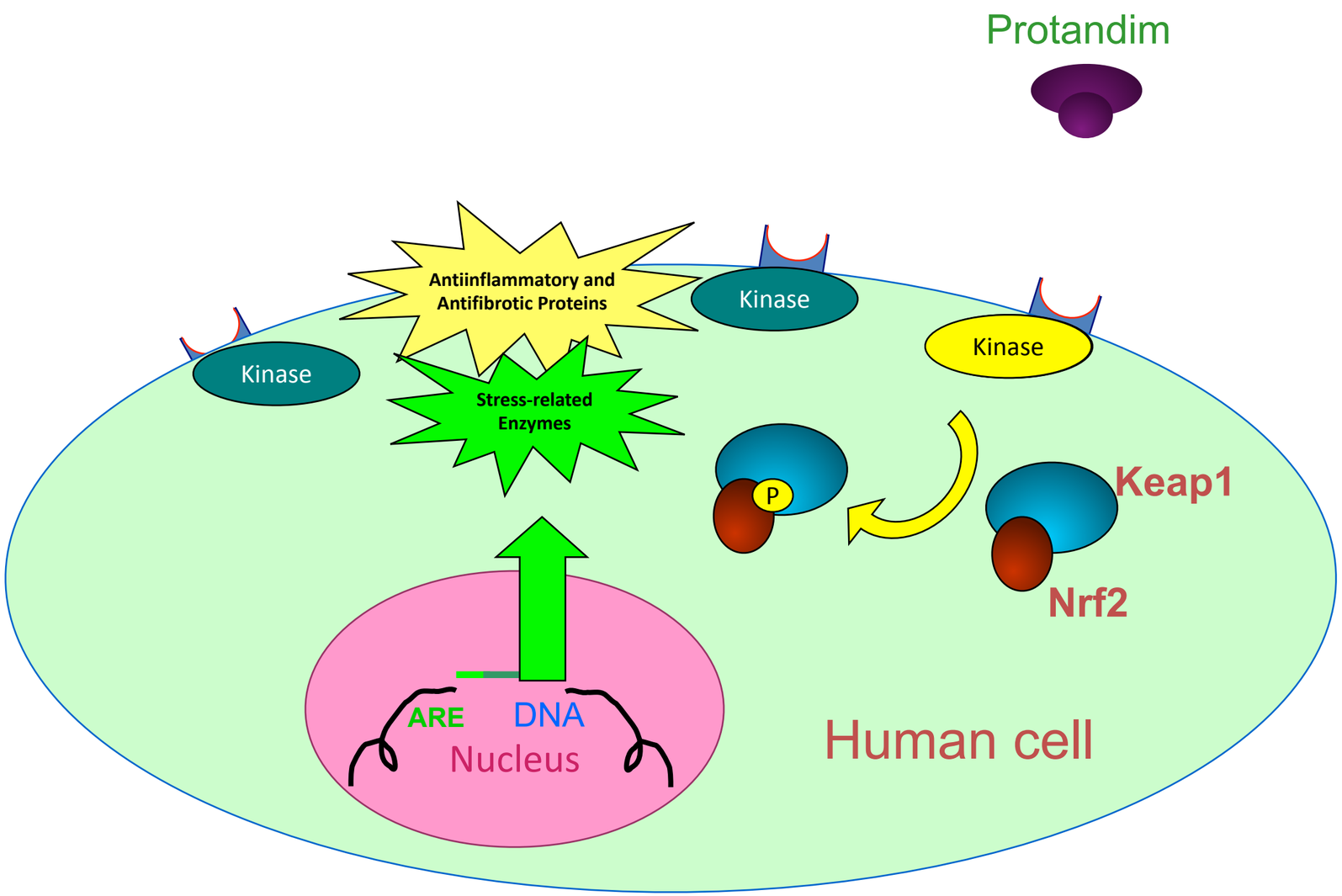
200
250
ug/mL
Ashwaghanda
Black Pepper
Milk Thistle
Tumeric
Green Tea
Bacopa
Protandim US
Protandim Japan

SYNERGY = Action greater than the sum of the parts

All five ingredients together produced an **18-fold increase** in the expression of this antioxidant gene.

Protandim BLEND works ***18 times more effectively than the sum of its parts***.




Protandim
Antiinflammatory and Antifibrotic Proteins
Kinase
Kinase
Kinase
Stress-related Enzymes
P
Keap1
Nrf2
ARE
DNA
Nucleus
Human cell

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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,*]

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[b] *Department of Medicine, University of Colorado Denver Health Sciences Center, Denver, CO 80262, USA*
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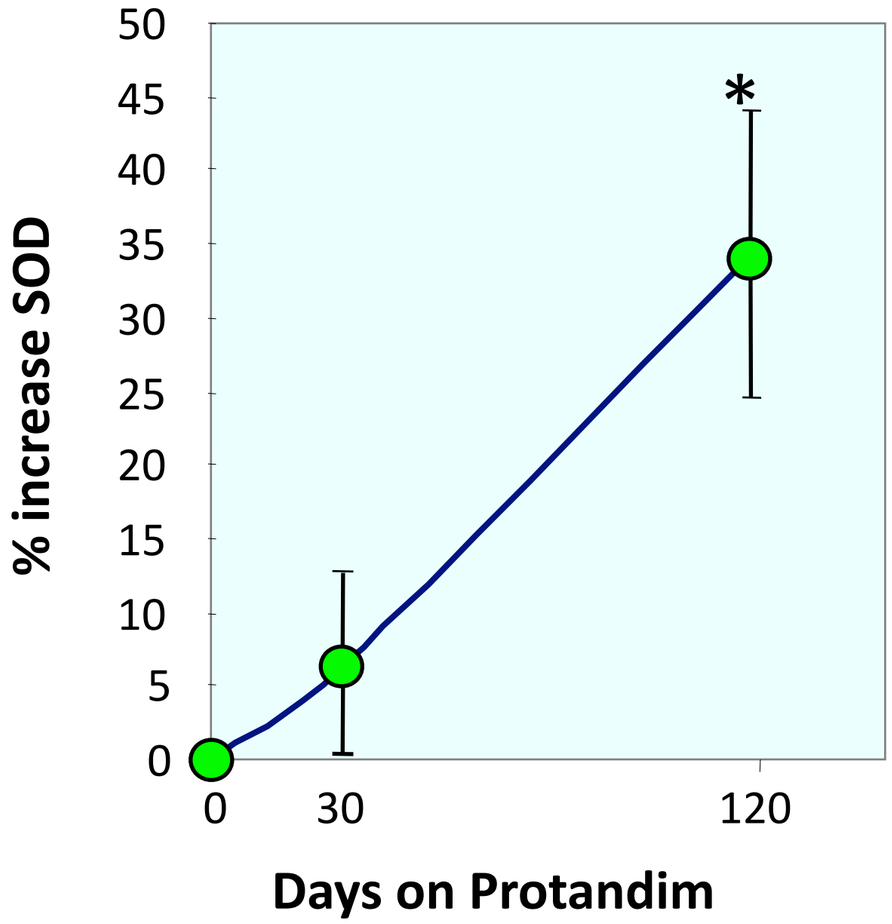
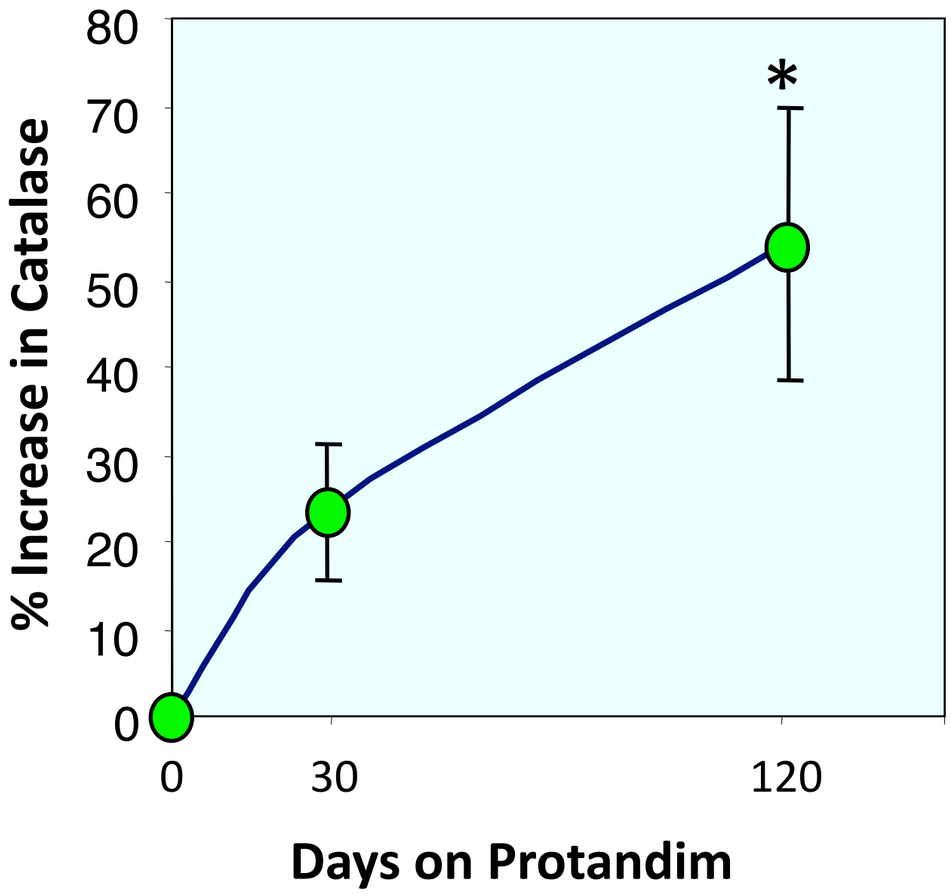
[d] *Lifeline Therapeutics, Denver, CO, USA*

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 supplementation, TBARS showed a strong age-dependent increase. After 30 days of supplementation, TBARS declined by an average of 40% ($p = 0.0001$) and the age-dependent increase was eliminated. By 120 days, erythrocyte SOD increased by 30% ($p < 0.01$) and catalase by 54% ($p < 0.002$). We conclude that modest induction of the catalytic antioxidants SOD and catalase may be a much more effective approach than supplementation with antioxidants (such as vitamins C and E) that can, at best, stoichiometrically scavenge a very small fraction of total oxidant production.

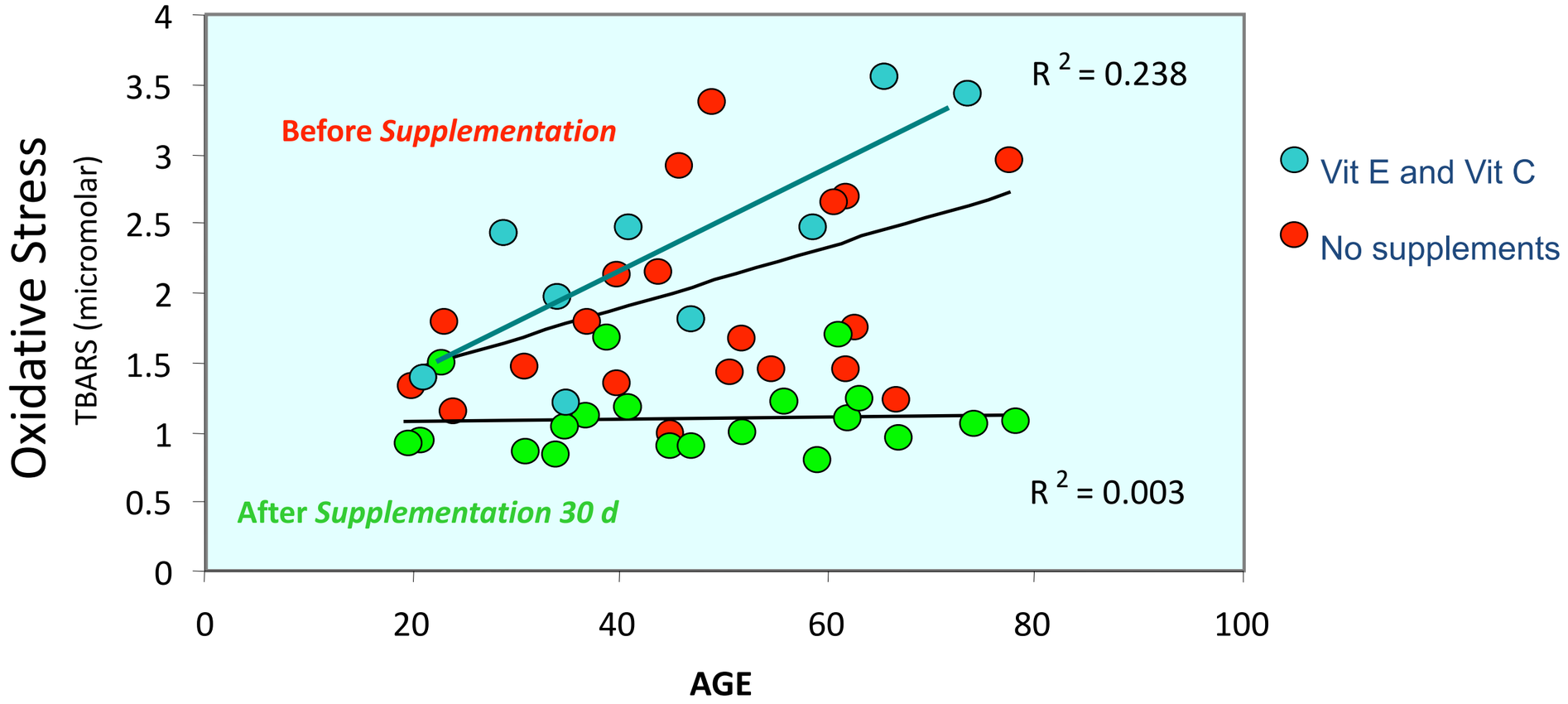




After 120 days…

SOD increased by **34%**

Catalase increased by **54%**



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%."

Exotic Ingredients + Proven Science + Exclusive IP =
World's finest products that help you Feel / Look / Perform Your Best

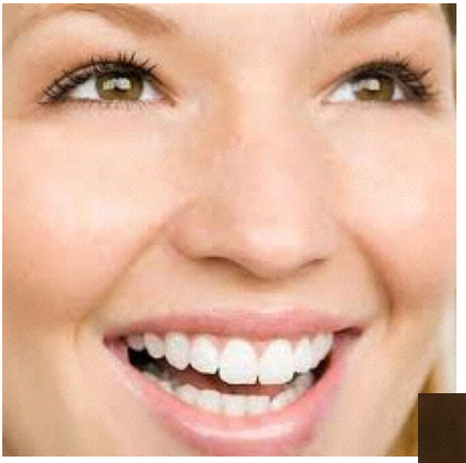
Protandim/Nrf2 – Fundamentally different approach to cellular protection

Feel Your Best

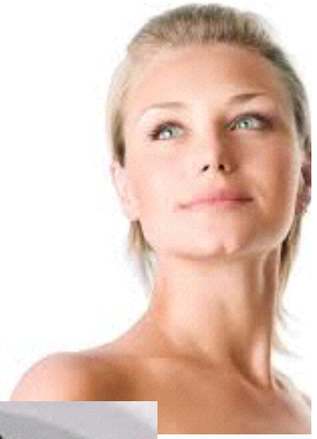
Look Your Best

Perform Your Best

Coordinated Product Platform




LifeVantage

Excellent
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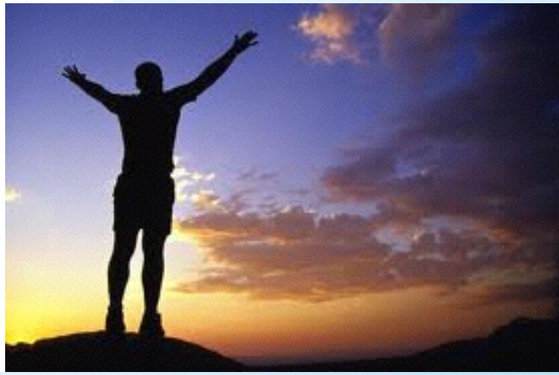
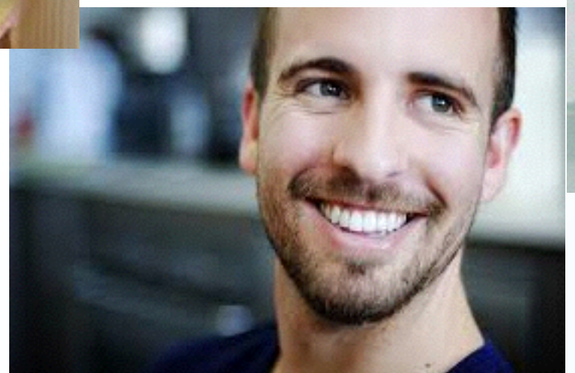



LOOK Your Best…

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

Competitor		28 Days	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

*Competitive advertising details available upon request

Versus Select Competitive Ads*

LifeVantage FREEDOM GLOBAL CONVENTION 2014

Clinical Study: What Users Said*

28 Days		56 Days
94%	Loved the fragrance	99%
90%	More hydrated skin	95%
89%	Will buy the regimen	91%
89%	Smoother looking skin	94%
88%	Softer skin	90%
84%	More luminous skin	88%
83%	Younger looking skin	87%
81%	More even skin tone	83%
81%	Firmer looking skin	85%
78%	Less noticeable fine lines and wrinkles	82%
74%	Felt younger-looking	80%
74%	Better than what I usually use	80%

*Satisfaction test, 86 women self-reported, 4 weeks and 8 weeks

- TrueScience™ facial cream with Advanced Nrf2 Technology applied 2 times per day for 5 days
  (Nrf2 Technology: *Bacopa, Milk Thistle, Turmeric, Green tea & Black Pepper extracts* + Brassicas extract + Plantain extract)

- Non Nrf2 cream applied 2x per day for 5 days

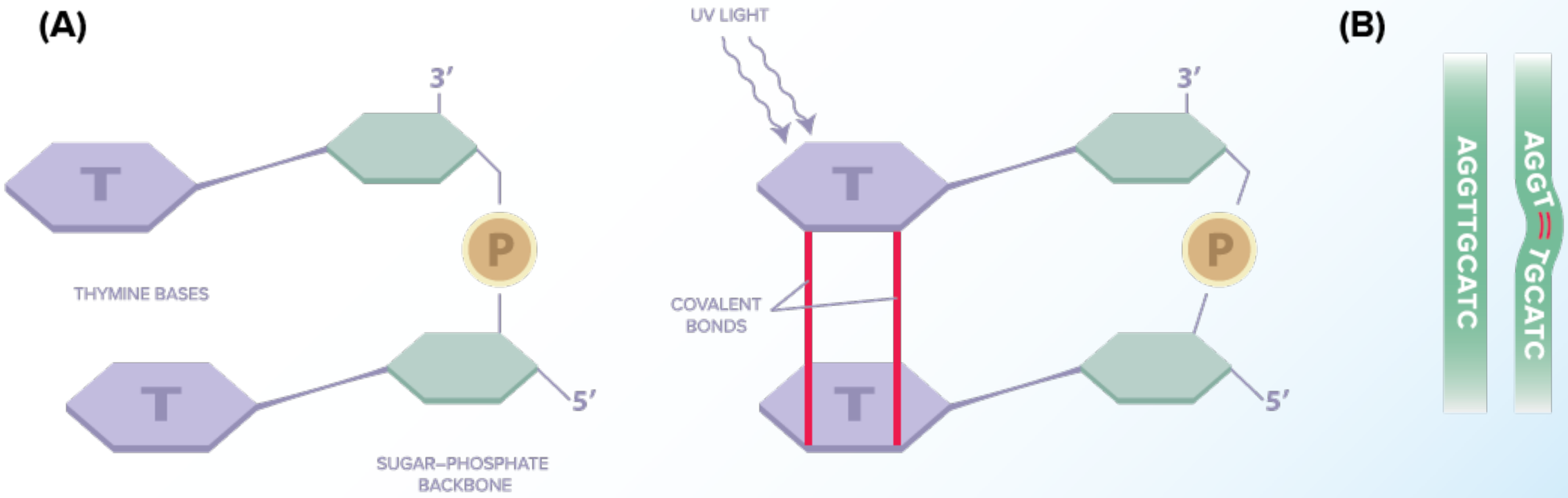
- Then expose the samples to UV light

- Quantify DNA damage and amount of Nrf2 Protein

- Then collect DNA, run gene expression & identify biological pathways

LifeVantage FREEDOM

Following UV exposure, the cellular DNA is damaged (Thymine Dimers)



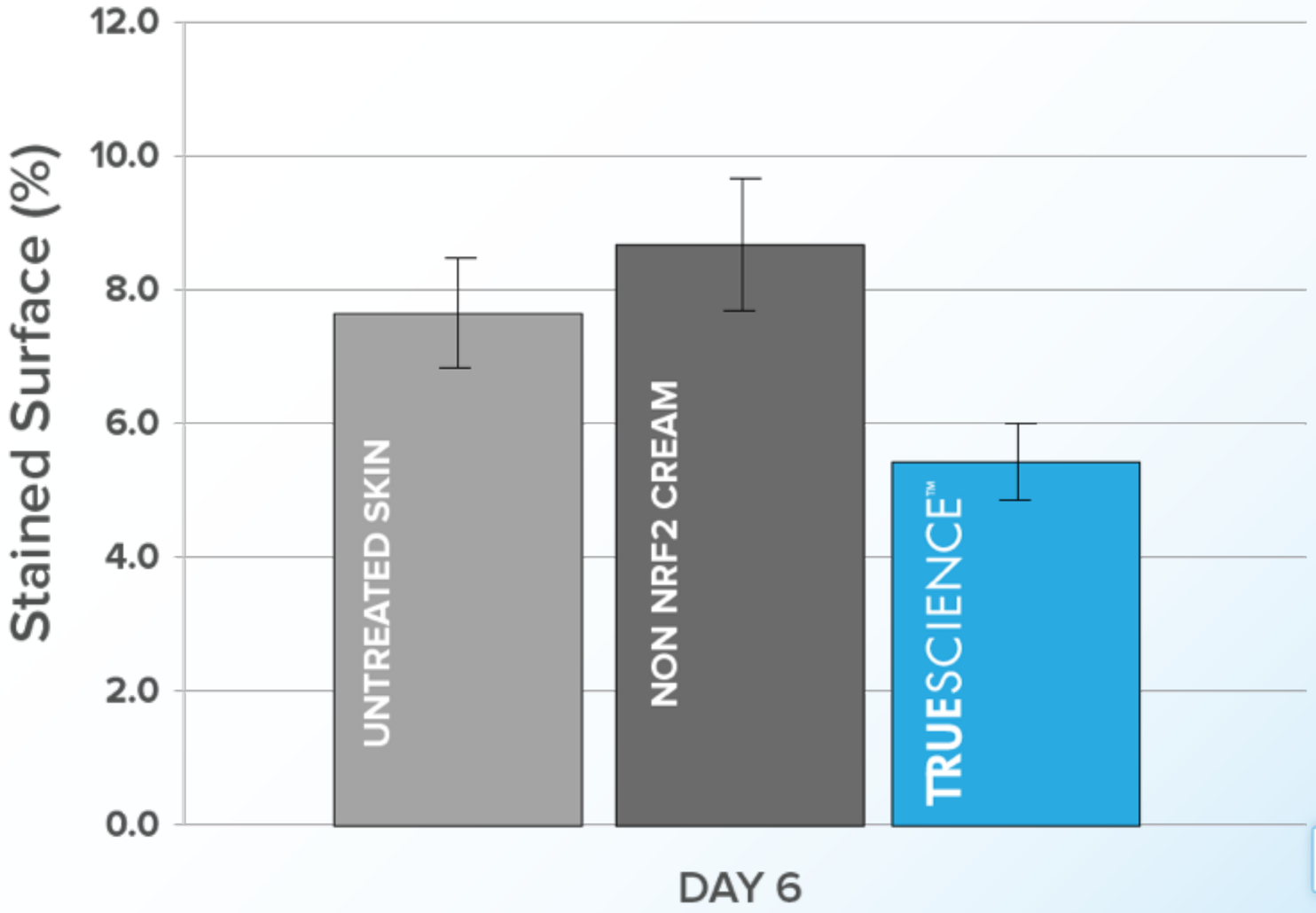
Affects DNA duplication

Causes genome instability

LifeVantage
FREEDOM

Less Thymine Dimers with TrueScience

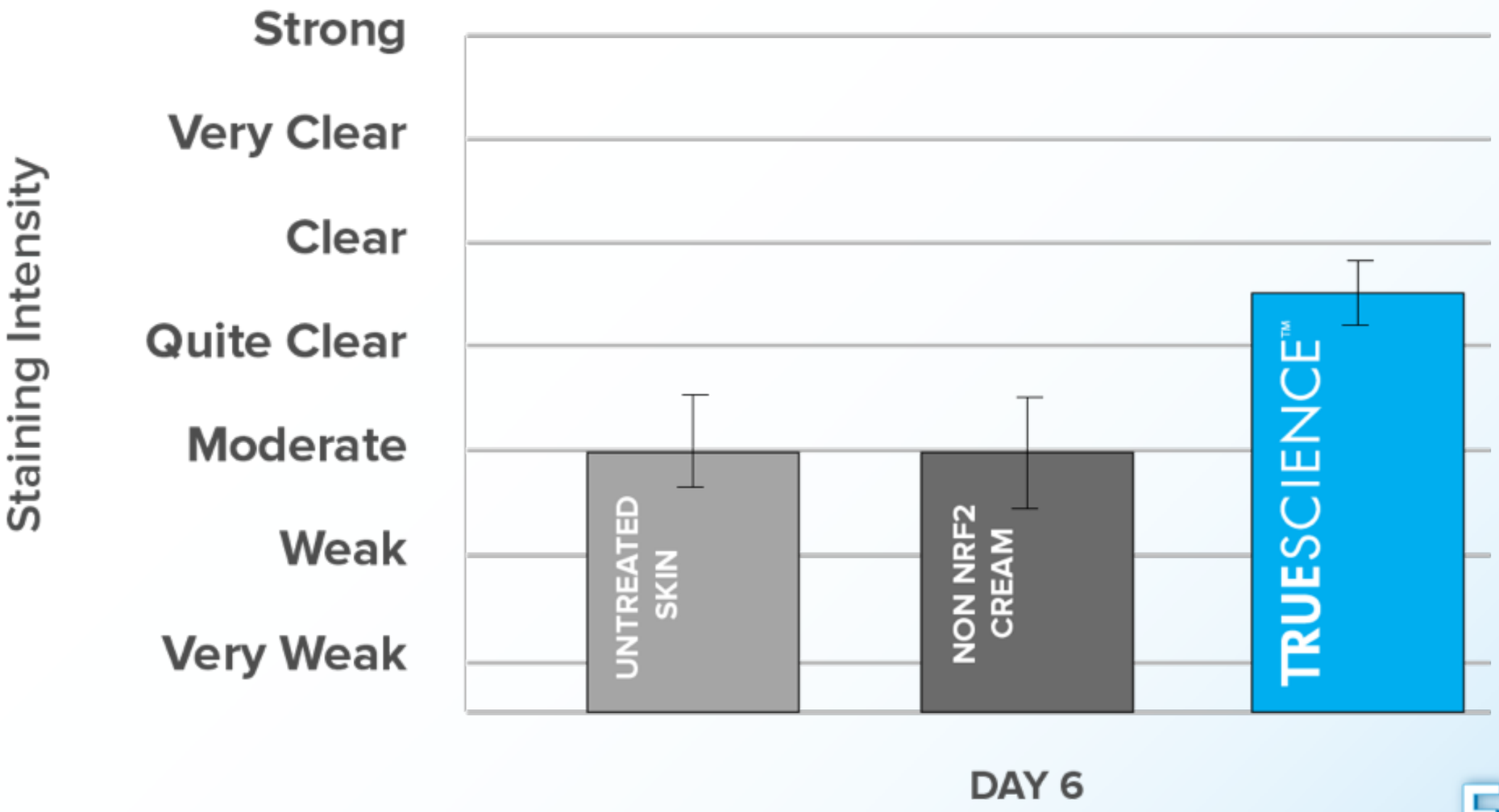
TrueScience™ Facial Cream with Nrf2 protects the cell DNA!



LifeVantage FREEDOM

Nrf2 Staining Intensity 24 hours after UV Exposure

TrueScience™ Facial Cream results in more Nrf2 in skin, thus more protection!



LifeVantage FREEDOM

Cascade Effect = All Skin Layers

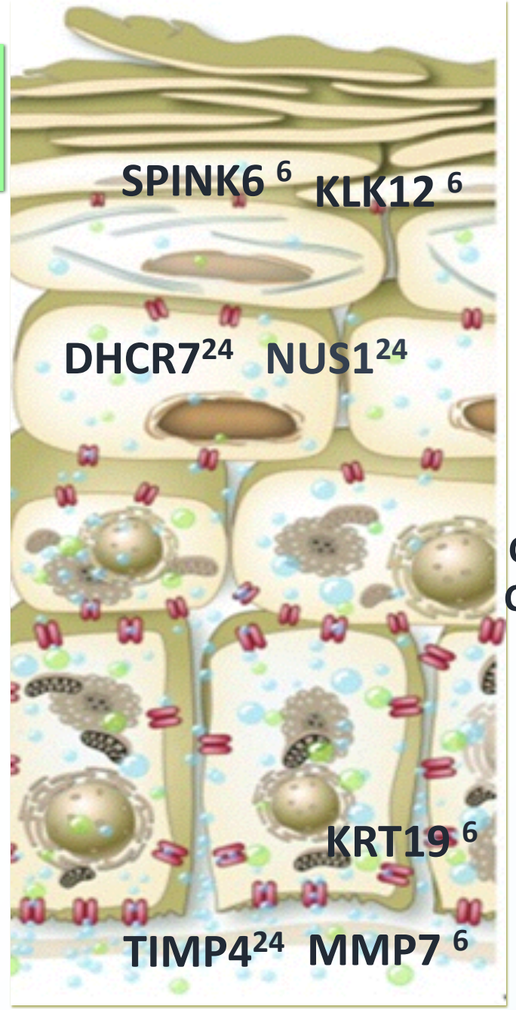
Cornified layers

Granular layers

Spinous layers

Basal layer

Dermis



tissue homeostasis

healthier skin

balance and maintain serine protease activities in the skin

cholesterol synthesis

intracellular cholesterol trafficking

BMP6 [6] SOX21[24] DOK2[24]

CEACAM1[6]
CEACAM5[6]
CCAR1[6]
ARID3A[24]

Cell differentiation

Cell proliferation

mRNA surveillance

UPF3B[6]

DNA repair

EVL[24]

structural integrity of epithelial cells

potential marker of epidermal stem cells

tissue remodeling

TS Facial cream initiates signals that cascade all the way though the deep layers of the skin

Resulting in better moisturization, protection, & younger looking skin

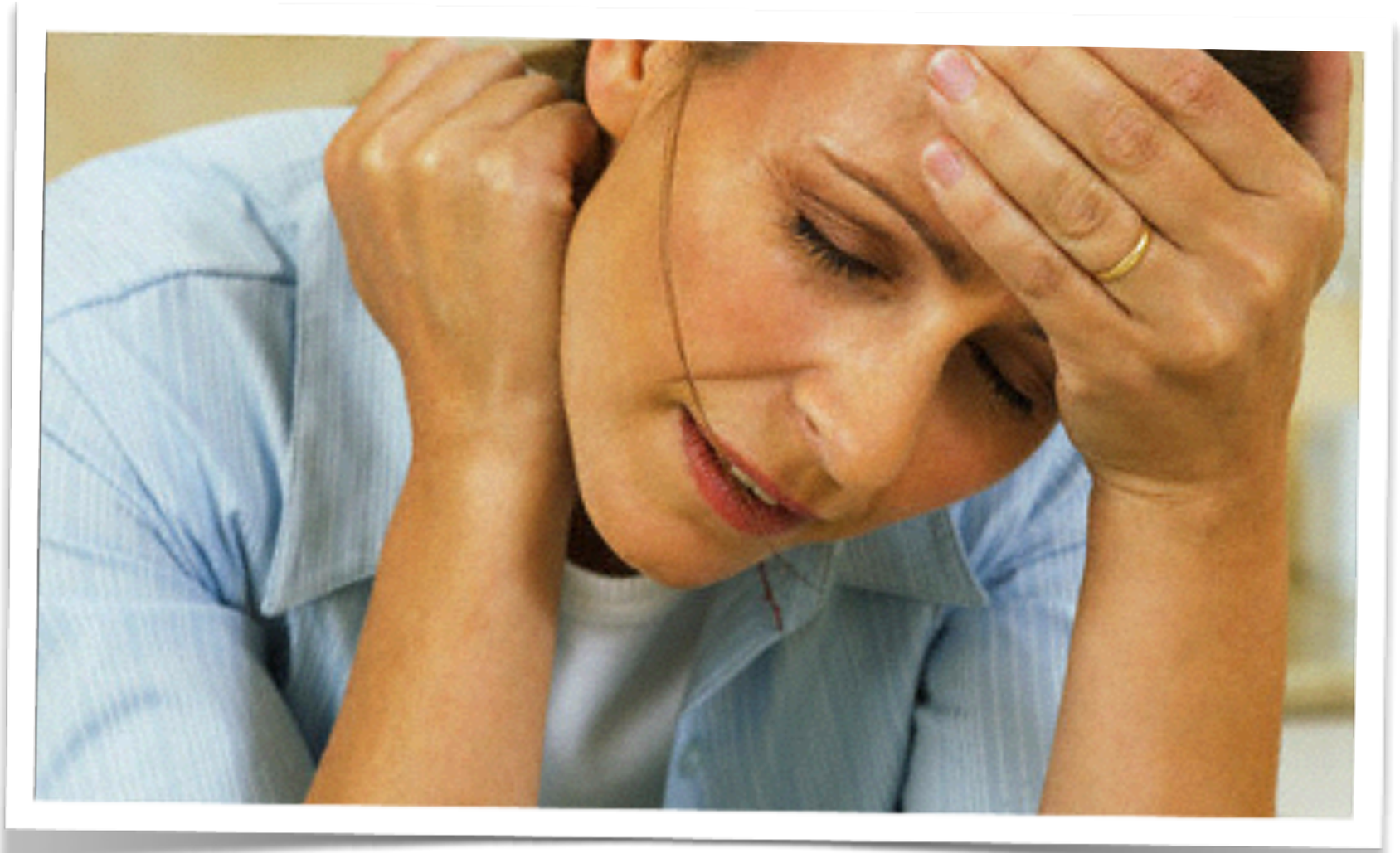
LifeVantage FREEDOM

TrueScience^{tm} Facial Cream with Advanced Nrf2 Technology has been shown to:

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

LifeVantage.
FREEDOM

FEEL Your Best…



Tired, Stressed, Depressed… “Off”

$100B+

ADDERALL XR
PROZAC
PROVIGIL (MODAFINIL) Tablets
STARBUCKS COFFEE
Lexapro
Folgers
Ritalin-SR®
MONSTER ENERGY
Celexa
Vyvanse
Zoloft
PAXIL
Wellbutrin XL
ROCKSTAR ENERGY DRINK
EFFEXOR XR
strattera atomoxetine HCl
AMBIEN
CONCERTA®
LUVOX
Cymbalta
Peet's Coffee & Tea
DUNKIN' DONUTS

SUPPLEMENT FACTS

Serving Size: 1 Packet
Serving Per Pouch: 30

	Amount Per Serving	% DV
Calories	10	
Total Carbohydrate	2 g	<1%*
Niacin (as Nicotinic Acid)	24 mg	120%
Vitamin B6 (as Pyridoxine HCL)	1.60 mg	80%
Vitamin B12 (as Methylcobalamin	6 mcg	100%
Magnesium (as Magnesium Aspartate)	10 mg	2%
Caffeine	100 mg	†
Proprietary Blend	500 mg	
DMAE Bitartrate		†
Green Tea Extract (Camellia sinensis) (Aerial)		†
Quercetin Dihydrate		†
Monterey Pine Extract (Pinus radiata) (Bark)		†
L-Theanine		†

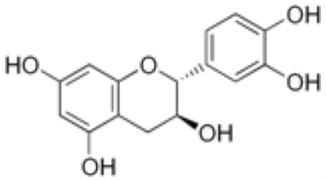
*% Daily Value are based on a 2,000 calorie diet.
† Daily Value not established

SUPPLEMENT FACTS

Serving Size: 1 Packet
Serving Per Pouch: 30

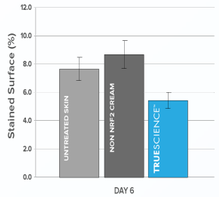
	Amount Per Serving	% DV
Calories	15	
Total Carbohydrate	3 g	1%*
Niacin (as Nicotinic Acid)	20 mg	100%
Vitamin B6 (as Pyridoxine HCL)	1.60 mg	80%
Vitamin B12 (as Methylcobalamin	6 mcg	100%
Magnesium (as Magnesium Aspartate)	10 mg	2%
Proprietary Blend	280 mg	
Green Tea Extract (Camellia sinensis) (Aerial)		†
Monterey Pine Extract (Pinus radiata) (Bark)		†
L-Theanine		†
Quercetin Dihydrate		†

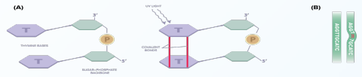
*% Daily Value are based on a 2,000 calorie diet.
† Daily Value not established



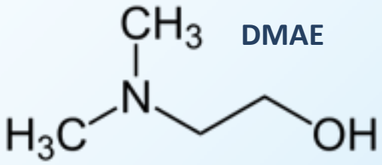
Catechin

Proanthocyanidin

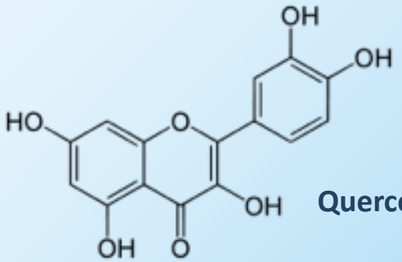




L-Theanine

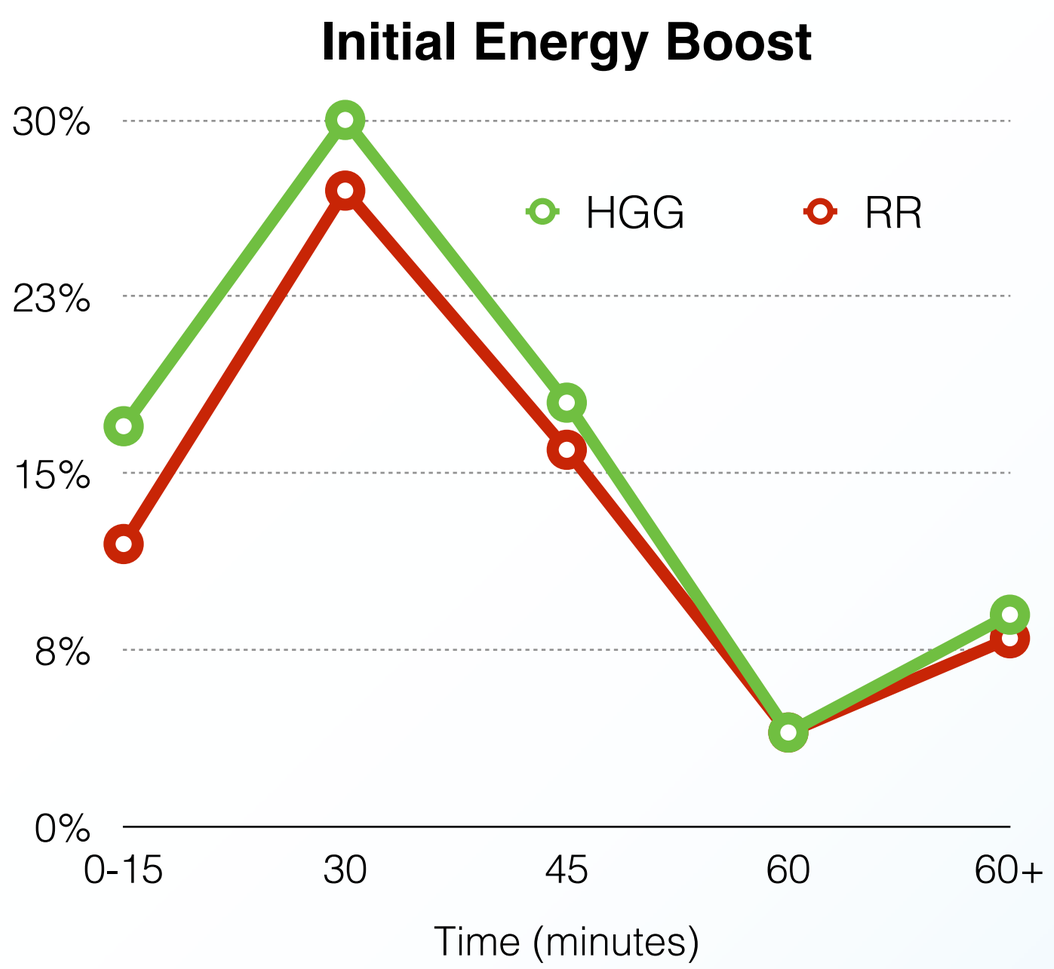


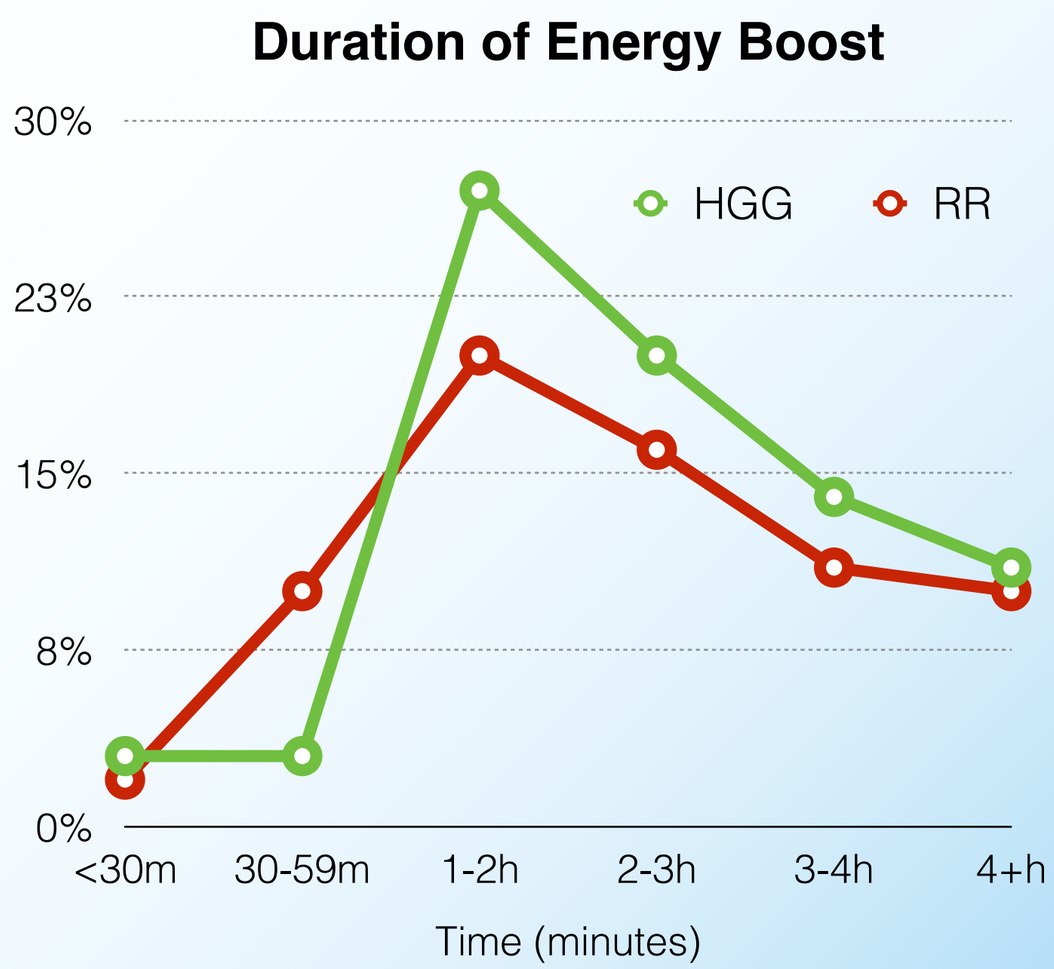
DMAE



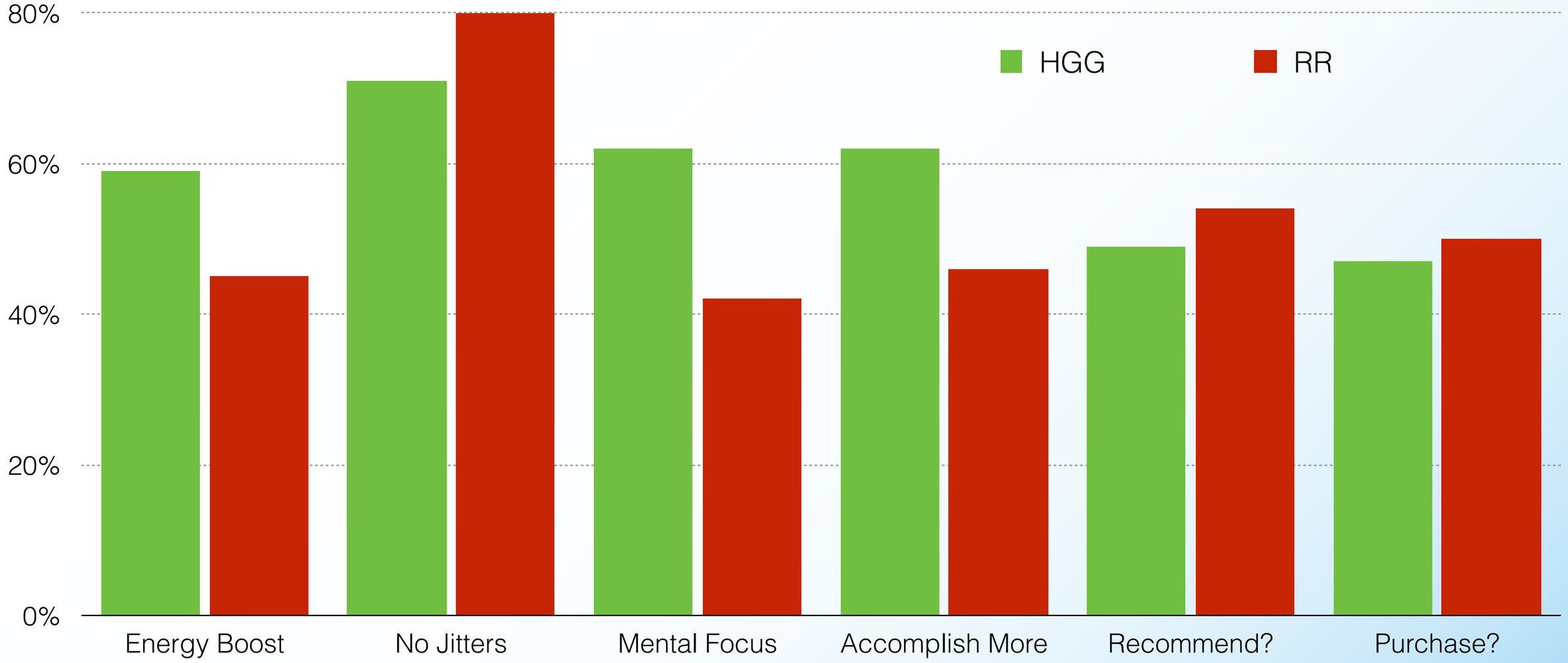
Quercetin

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.**"

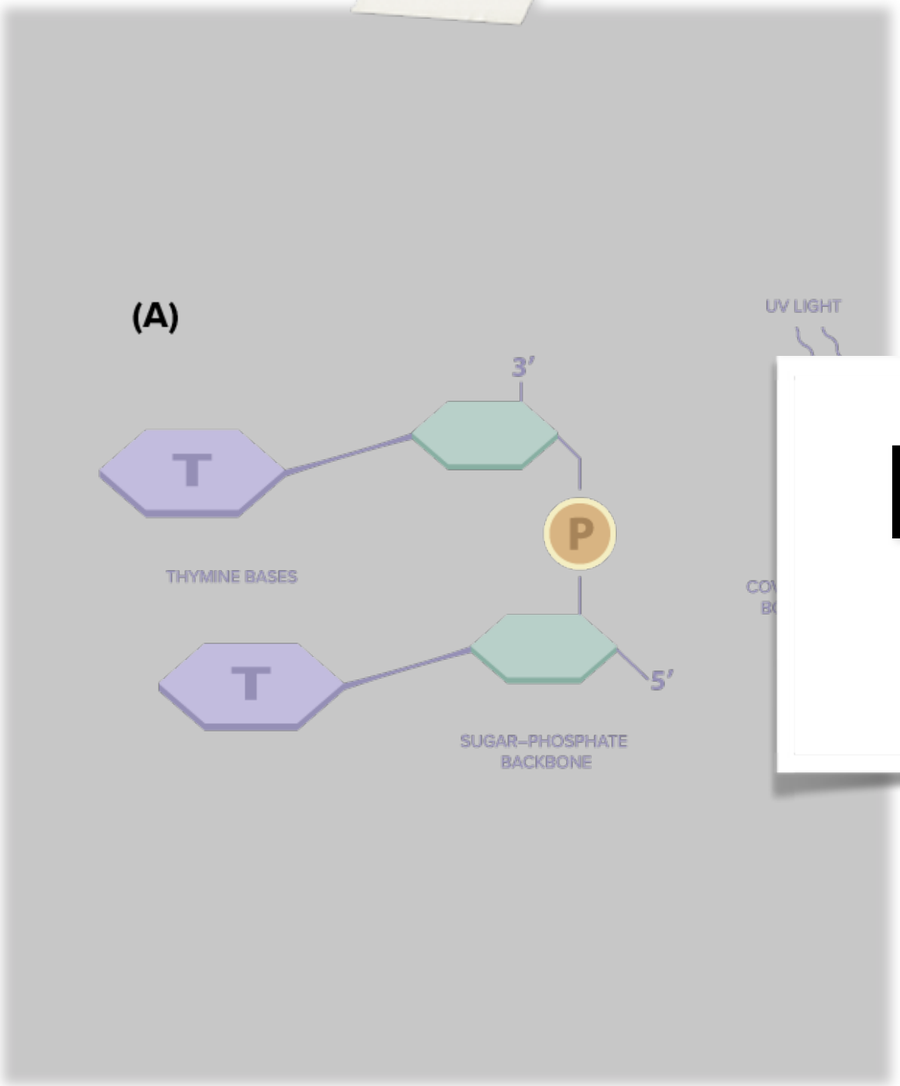
- "I liked the energy that it gave me, I would say it lasted pretty good maybe **4 or 5 hours.**"

- "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."

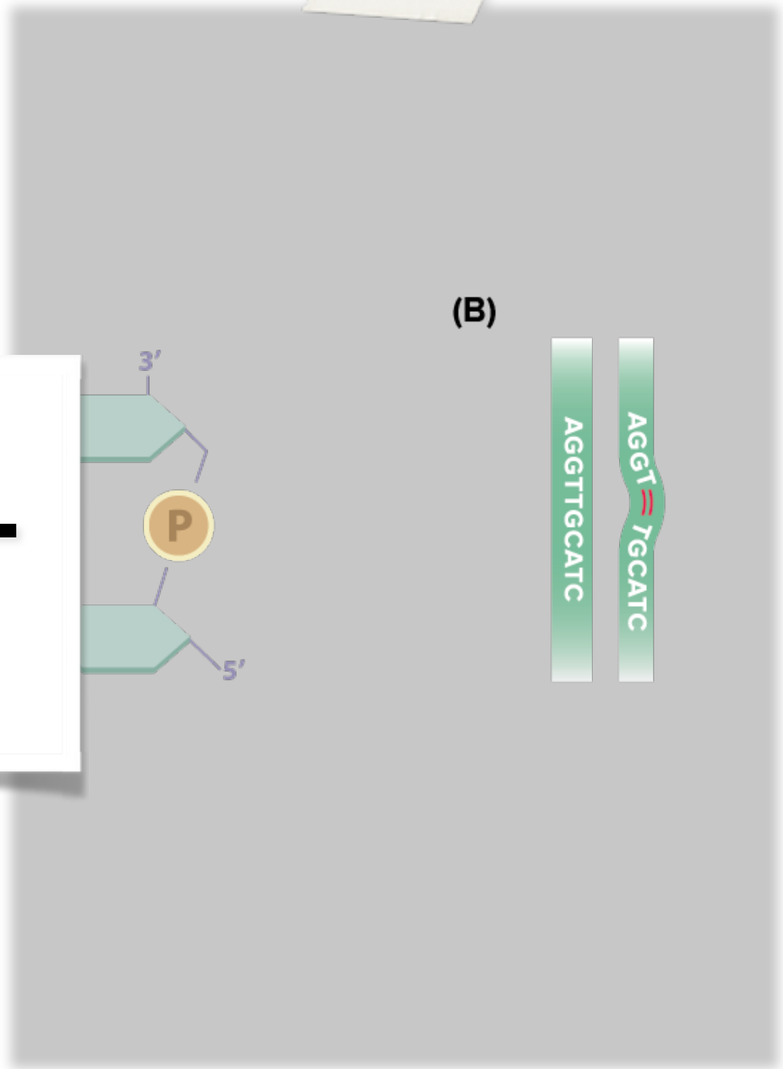
- "It was a very subtle transition to having energy, just like I **naturally** had the energy. It was a good amount of energy too. **Not too wired,** not too draggy. **The perfect amount.** I didn't feel like it wore off halfway through the day or that I needed more energy. I also did not have a difficult time falling asleep at night because of it. I would **definitely buy this** instead of many other energy drinks or supplements."

LifeVantage FREEDOM

PERFORM Your Best…



NEURONAL ATROPHY



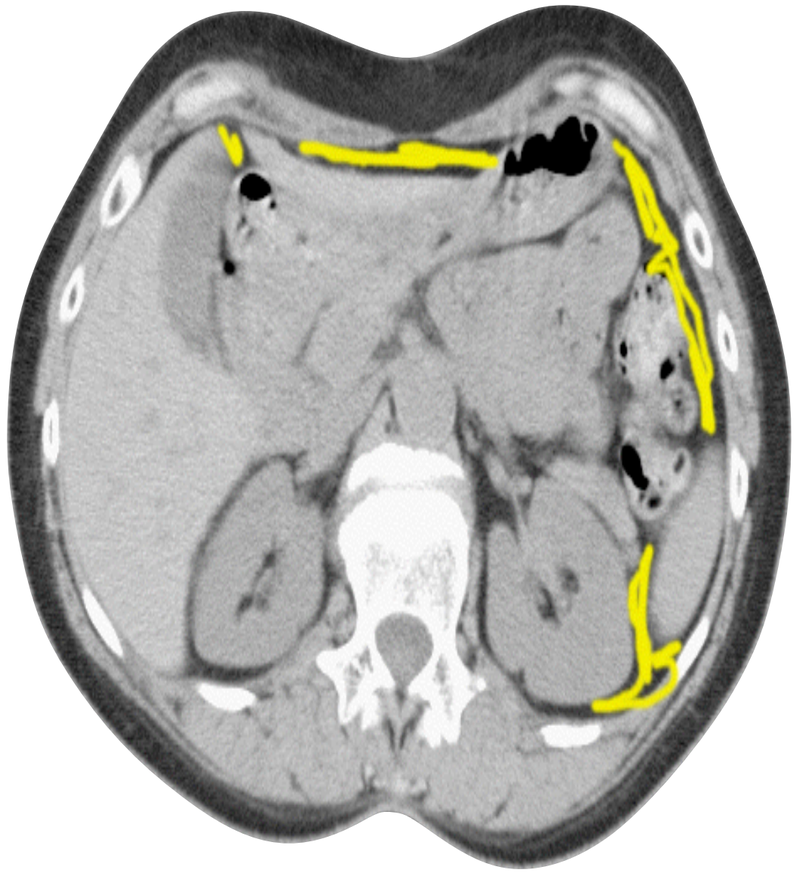
NORMAL STRESS

Healthy, Large, Many Projections, Optimal Function

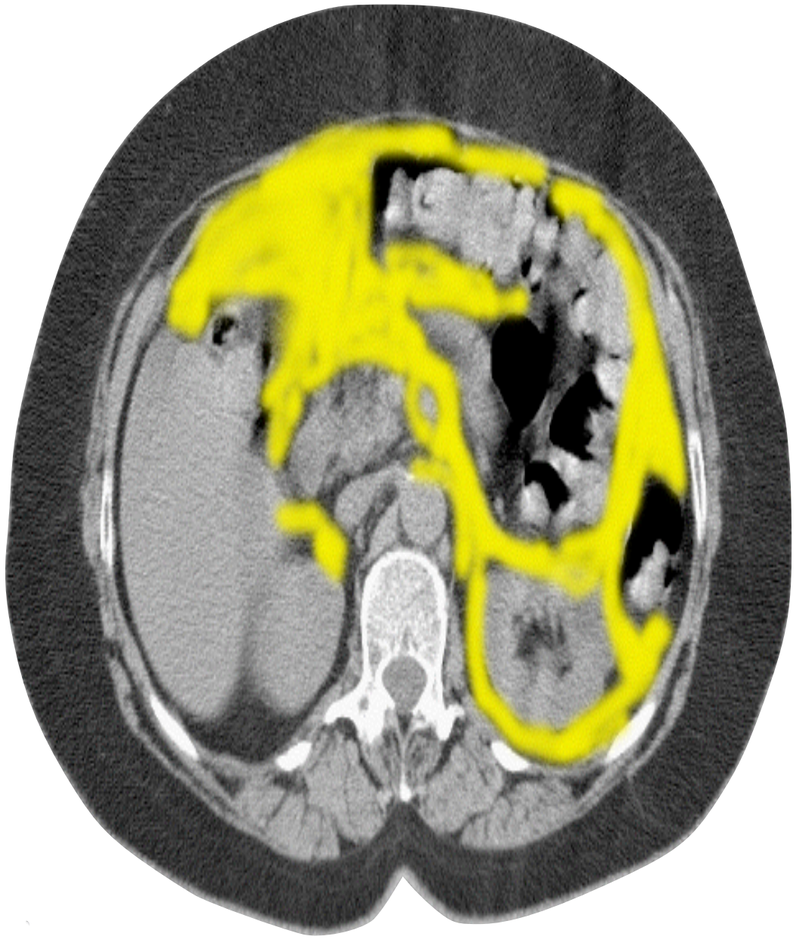
HIGH STRESS

Small, Thin, Disrupted, Structural Damage, Poor Function

ABDOMINAL FAT ACCUMULATION



Normal Stress



High Stress

Research Study Update

Completed[1], Ongoing[2], Planned[3]

- 19 studies[1] (U Colorado, Ohio State U, Louisiana State U, Virginia Commonwealth U, Colorado State U, Texas Tech U…)
- "20th study" (Mayo Clinic, 2014)[1] - anecdotal patient report prompts series of translational cell culture and rodent studies
  - Translational research = aims to make findings from basic science useful for practical applications that enhance human health and well-being
- Montreal, Canada (skin)[1]
- National Institutes of Health (longevity)[2]
- Nashville, TN (heart health)[2]
- Melbourne, Australia (brain function)[3]
- Okinawa, Japan (lung function)[3]
- Research Institutions[3] (Salt Lake, Miami, Louisville, Fort Collins, Boston, NYC…)
  - energy/mood/focus, performance, antioxidant metabolism, eye health…
  - canine health, periodontal health, blood sugar balance…

LifeVantage FREEDOM

NEWS am
GOOD MORNING, WORLD!

WSIU npr
PUBLIC BROADCASTING

WOCA News Talk 1370 AM

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Today's Modern Mix

GREAT SONGS
WENU
101.7 FM
REAL MUSIC

WXBR
THE NEW
1460 AM

KCMW
AM 1530
Legends

WCVX
• Victory 1050 • Victory 1050 • Victory 1050 •
AM 1050 Cincinnati's Christian Voice

WCHE 1520AM
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1330am
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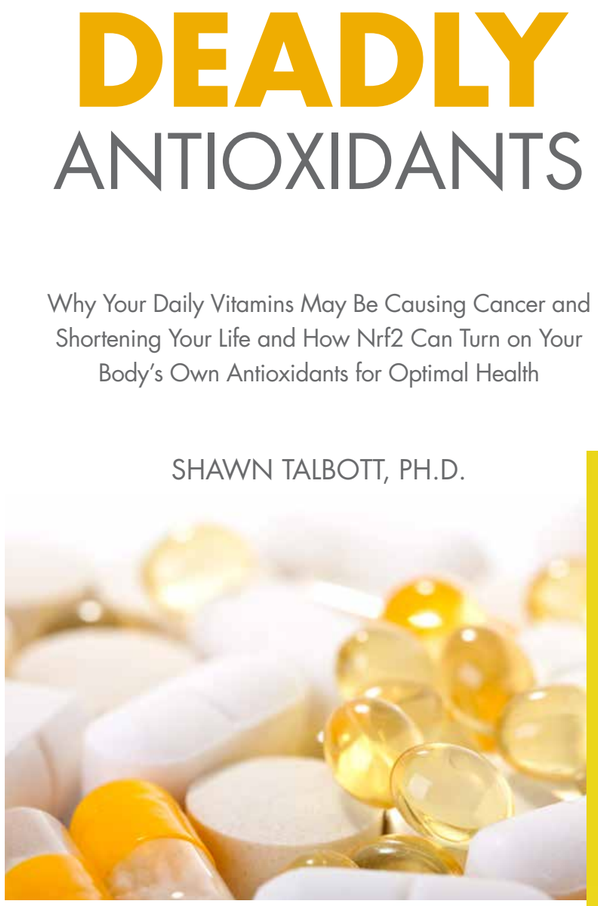
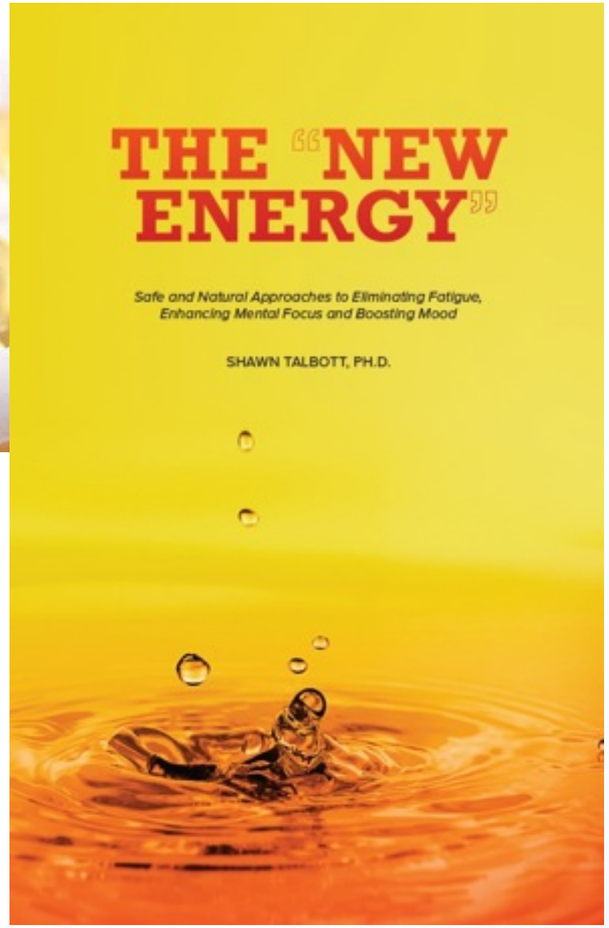
WESB
NewsRadio 1490
THE HERO 100.1
The Morning BUZZ
with Scott Douglas

THE VOICE OF THE FOOTHILLS
AM 950 KAHI
Community Involved
Serving the Foothills of Northern California Live at AM 950 and Serving the World Live at www.kahi.com

LifeLAB





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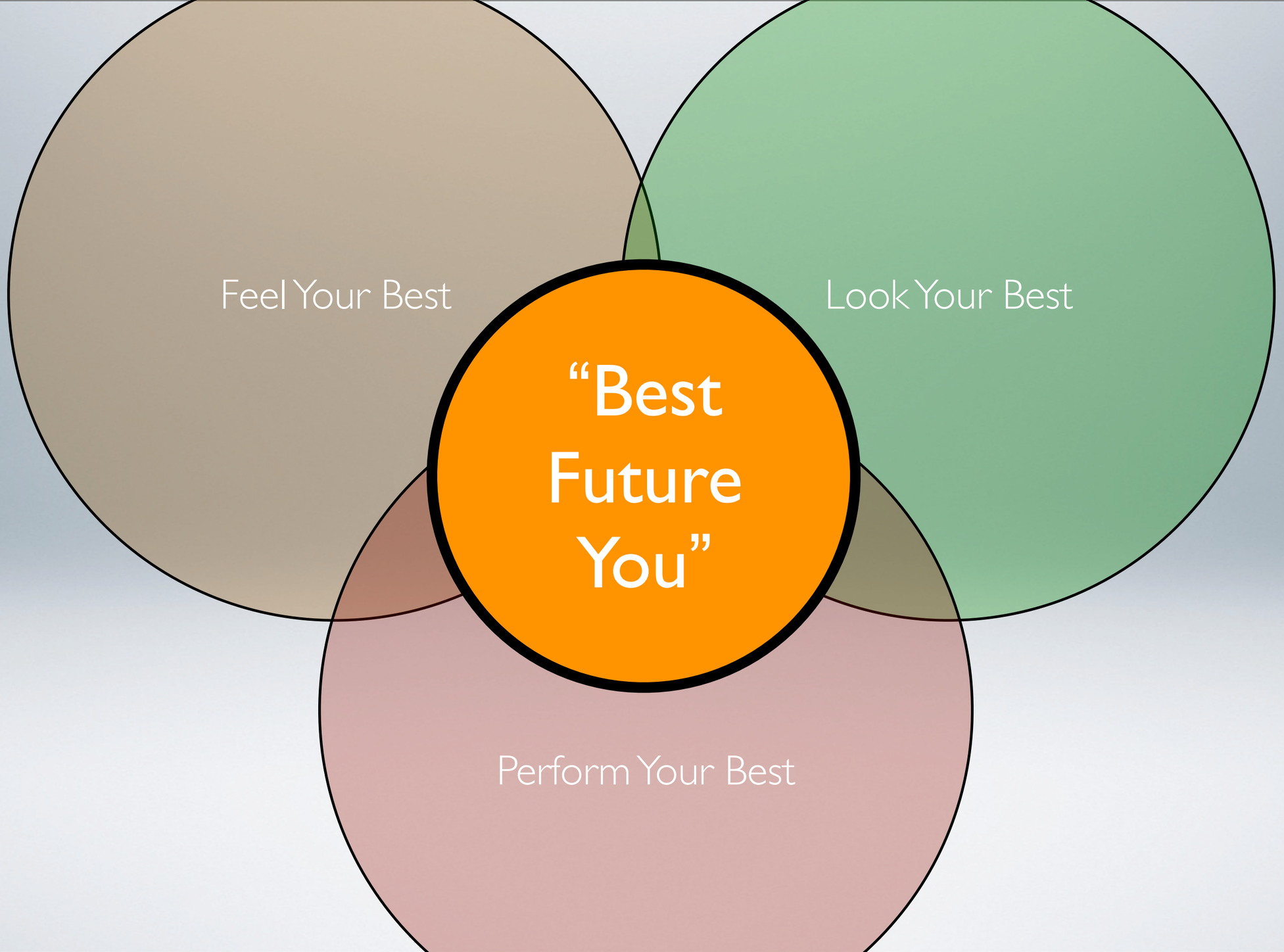
FREEDOM


Feel Your Best
Look Your Best
"Best Future You"
Perform Your Best