36 PEER-REVIEWED STUDIES · 10 U.S. PATENTS

Your body already has the answer.

LifeVantage—activating the pharmacy within your body.

This isn't supplementation. It's activation—switching on the body's own genetic antioxidant defense system at the cellular level. The research below spans Harvard, Ohio State, Louisiana State, Colorado, Mayo Clinic, Johns Hopkins, and the National Institute on Aging.

40%	**70%**	**+300%**	**1M+**
OXIDATIVE STRESS REDUCTION IN 30 DAYS	**REDUCTION AT 120 DAYS**	**GLUTATHIONE INCREASE**	**FREE RADICALS NEUTRALIZED / SECOND**
Every subject studied	Age-dependent increase eliminated	Master antioxidant, made from within	By induced antioxidant enzymes

> *"Nrf2 is the master regulator of the antioxidant response, modulating the expression of hundreds of genes—providing a logical explanation for connections between oxidative stress and perhaps 200 human diseases."*

UNIVERSITY OF COLORADO · MOLECULAR ASPECTS OF MEDICINE, 2011

ENZYMATIC RESPONSE · INDIRECT ANTIOXIDANT ACTIVATION

+300%

Glutathione

Crosses blood-brain & gut barriers; supports liver and kidneys.

+54%

Catalase

Neutralizes hydrogen peroxide; essential cellular protection.

+30%

SOD / MnSOD

The only antioxidant enzyme that suppresses tumor formation when overexpressed.

PEER-REVIEWED RESEARCH ON THE BRANDED PRODUCT

Research is conducted on the branded product **Protandim** at pubmed.ncbi.nlm.nih.gov—not on isolated ingredients.

STUDY 1 · LOUISIANA STATE UNIVERSITY · FREE RADICAL BIOLOGY & MEDICINE · 2006

Oxidative stress reduced 40% in 30 days · 70% at 120 days

The gold-standard oxidative stress marker TBARS declined **40% on average (p=0.0001)** in healthy adults aged 20–78. The age-dependent increase was not reduced—it was **eliminated in every subject**. At 120 days: 70% reduction. SOD +30%, Catalase +54%. No other pharmaceutical or nutraceutical has this peer-reviewed result.

40%	*70%*	*p=0.0001*
30-DAY DROP	AT 120 DAYS	ALL AGES 20–78

PMID 16413416 · Free Radical Biology & Medicine

STUDY 2 · UNIVERSITY OF COLORADO · 2008 · AMERICAN & JUVENILE DIABETES ASSOCIATIONS

Glutathione +300% · synergistic five-ingredient formula

Confirmed Protandim as a potent Nrf2 activator raising glutathione by 300%. Each ingredient alone showed minimal induction—together, the patented ingredients produce a synergistic response far greater than the sum of its parts. Also shown to protect pancreatic and brain glial cells.

+300%	*+54%*	*+30%*
GLUTATHIONE	CATALASE	SOD

PMID 19056485 · Synergistic Induction of Heme Oxygenase-1 · 2008

STUDY 3 · UNIVERSITY OF COLORADO · MOLECULAR ASPECTS OF MEDICINE · 2011

Nrf2 master regulator · 7× sulforaphane · 2× Nrf2 pharma

Tested against sulforaphane (broccoli sprouts), bardoxolone methyl, and dimethyl fumarate. Protandim achieved the most potent Nrf2 activation observed (135-fold FImax). Modulates gene pathways for colon cancer, cardiovascular disease, and Alzheimer's; upregulated all five key Alzheimer's antioxidant genes.

7×	*2×*
VS SULFORAPHANE	VS NRF2 PHARMA DRUGS

PMID 22020111 · Oxidative Stress in Health & Disease · 2011

STUDY 4 · VIRGINIA COMMONWEALTH UNIVERSITY · AMERICAN HEART ASSOCIATION · CIRCULATION · 2009

Cardioprotection in pulmonary hypertension · anti-fibrotic

One of five AHA studies on Protandim, published in *Circulation*. In a pulmonary hypertension model, Protandim protected heart muscle, prevented cardiac fibrosis, preserved output, reduced osteopontin >50%, and raised protective gene expression (Nrf2, HO-1, VEGF).

50%+	*5*
OSTEOPONTIN REDUCTION	AHA CARDIO STUDIES

PMID 19884466 · Circulation · AHA · VCU · 2009

STUDY 5 · OHIO STATE UNIVERSITY · AHA + NIH FUNDED · 2010

Coronary bypass graft protection · intimal hyperplasia blocked

Human saphenous veins treated with Protandim showed complete blockage of intimal hyperplasia—the cell over-proliferation that re-blocks vessels after bypass, stenting, and endarterectomy. Reduced proliferation to the level of freshly isolated veins; raised antioxidant enzyme activity while lowering free radicals.

PMID 21167278 · Ohio State / AHA / NIH · 2010

STUDY 6 · LOUISIANA STATE UNIVERSITY · SKIN CANCER CONTROLLED TRIAL · 2009

Skin cancer: 33% developed zero cancer vs. 100% control rate

100% of subjects received a carcinogen. Control group: 100% developed cancer. Protandim group: 33% developed zero cancer; the remainder had 40% less aggressive cancer with fewer, smaller tumors. Conclusion: **“the induction of antioxidant enzymes by Protandim may be practical for cancer prevention.”**

33%	*40%*	*100%*
ZERO CANCER	LESS AGGRESSIVE	CONTROL RATE

PMID 19384424 · LSU Skin Cancer Controlled Trial · 2009

STUDY 7 · LOUISIANA STATE UNIVERSITY · CHEMOPREVENTION / MNSOD · 2010

MnSOD tumor suppression: incidence −33% · multiplicity −57%

MnSOD is the only antioxidant enzyme that suppresses tumor formation when overexpressed—and Protandim is a potent MnSOD inducer. In a two-stage skin carcinogenesis model, Protandim decreased tumor incidence by 33% and tumor multiplicity by 57%.

−33%	*−57%*
TUMOR INCIDENCE	TUMOR MULTIPLICITY

PMID 20689586 · LSU Chemoprevention / MnSOD · 2010

STUDY 8 · LOUISIANA STATE UNIVERSITY · ROLE OF MNSOD IN SKIN CANCER · 2011

The role of manganese SOD (upregulated by Protandim) in skin cancer

A two-part model examining MnSOD's role in skin cancer. Protandim decreased tumor incidence and multiplicity by 33% and 57% respectively. MnSOD is gaining interest as a novel mechanism of chemoprevention; confirms Protandim as a novel approach via MnSOD induction.

PMID 21603266 · LSU Role of MnSOD in Skin Cancer · 2011

STUDY 9 · HARVARD UNIVERSITY · DUCHENNE MUSCULAR DYSTROPHY MODEL · 2010

Muscular dystrophy: 48% drop in oxidative stress · 57% drop in osteopontin

Oxidative damage is central in DMD. After six months of Protandim in a dystrophin-deficient mouse model: 48% decrease in plasma TBARS, 57% decrease in plasma osteopontin, and a 35% increase in protective plasma PON1 (associated with HDL and cardiovascular protection).

48%
TBARS

57%
OSTEOPONTIN

35%
PON1 INCREASE

PMID 20740052 · Harvard / Duchenne MD Model · 2010

STUDY 10 · BIOGEN IDEC (MAKER OF TECFIDERA / BG-12) · MULTIPLE SCLEROSIS · 2016

Protandim vs. MS drug Tecfidera: "most potent inducer" · "likely better therapy"

The company that makes Tecfidera—an Nrf2 drug for MS—funded a head-to-head comparison of BG-12, tBHQ, SFN, and Protandim for oligodendrocyte protection. Protandim showed **the most potent Nrf2 induction** of all compounds tested and was identified as the most suited therapeutic strategy.

PMID 27618111 · Protandim Protects Oligodendrocytes · 2016

STUDY 11 · COLORADO STATE UNIVERSITY · 2012

Human coronary artery endothelial cells: HO-1 +778%

Protandim induced Nrf2 nuclear localization and antioxidant enzyme expression in human coronary artery endothelial cells: HO-1 at 778% of control, SOD1 at 125.9%, NQO1 at 126%, glutathione reductase at 119.5%. Protection confirmed as Nrf2-dependent.

778%
HO-1 INDUCTION

Colorado State University · Phytochemical Activation of Nrf2 · 2012

STUDY 12 · COLORADO STATE UNIVERSITY · PUBMED · 2012

Cardiomyocyte protection: more robust than oxidant treatment itself

Protandim activates Nrf2, induces phase II detoxification enzymes, and protects cardiomyocytes from oxidant-induced apoptosis. Phytochemical treatment with Protandim was a more robust Nrf2 activator than oxidant treatment itself—supporting use to increase antioxidant defenses in heart cells.

PMID 23201694 · Colorado State · Cardiomyocyte Protection · 2012

STUDY 13 · UNIVERSITY OF COLORADO · ACUTE MOUNTAIN SICKNESS STUDY

Acute mountain sickness: Nrf2 activation prevents cerebral vascular leak

Of nine tested compounds, only Nrf2 activators decreased high-altitude cerebral vascular leak in vivo. Protandim was one of only six compounds with this protective effect, alongside several prescription drugs. Nrf2 regulates over 90% of all antioxidant genes.

PMID 23722164 · Acute Mountain Sickness & Nrf2 · U. of Colorado

STUDY 14 · ATHEROSCLEROSIS · PUBMED · 2013

Vascular disease: vitamin antioxidants fail; enzymatic Nrf2 is the correct approach

Large clinical trials show non-specific ROS scavenging by antioxidant vitamins is ineffective or sometimes harmful. Enzymatic Nrf2 activation—targeting SOD, catalase, glutathione peroxidases—is confirmed as the correct therapeutic approach, validating Protandim's mechanism over standard antioxidant supplements.

PMID 24009865 · Atherosclerotic Vascular Disease · 2013

STUDY 15 · NRF2 & CARDIOVASCULAR DISEASE · PUBMED · 2013

The role of Nrf2 in attenuation of cardiovascular disease

A comprehensive review establishing Nrf2 activation as a cardioprotective strategy, connecting Nrf2 activity to reduced oxidative stress, inflammation, fibrosis, and vascular dysfunction—adding to the five AHA-published Protandim cardiovascular studies.

PMID 23558695 · Role of Nrf2 in Attenuation of CVD · 2013

STUDY 16 · NATIONAL INSTITUTE ON AGING / NIH · INTERVENTIONS TESTING PROGRAM · 2016

7% lifespan extension in male mice—only natural product in the NIA ITP

The NIA's 10-year federally funded Interventions Testing Program is the gold standard of longevity research. Protandim extended lifespan in male mice by 7%; the same study referenced Metformin. Protandim is the only natural product to achieve statistically significant lifespan extension in the program.

7%
LIFESPAN EXTENSION

Only
NATURAL PRODUCT IN ITP

PMID 27312235 · NIA Longevity Study · 2016

STUDY 17 · OSTEOARTHRITIS STUDY WITH PROTANDIM · 2016

Protandim & 6-gingerol: protection against osteoarthritis

A 2016 study examining Protandim directly in an osteoarthritis model, elucidating the role of Protandim and 6-gingerol in cartilage protection. Nrf2 activation was shown to protect cartilage from destruction—significant given cartilage's limited regenerative capacity.

PMID 27463229 · Protandim & 6-Gingerol in Osteoarthritis · 2016

STUDY 18 · ATHLETIC PERFORMANCE · RUNNERS STUDY · 2016 (+ 2020 CORRECTION)

Protandim supplementation & athletic performance in runners

Examined the effect of Protandim on athletic performance and oxidative blood markers in runners, assessing Nrf2 activation interacting with exercise-induced oxidative stress—relevant because intense exercise generates significant free radical production.

PMID 27513339 · Athletic Performance in Runners · 2016 (corr. 33096544, 2020)

STUDY 19 · SKELETAL MUSCLE / SARCOPENIA · 2017

Nrf2 activators & skeletal muscle protein synthesis in older adults

Influence of Nrf2 activators on skeletal muscle protein and DNA synthesis after six weeks of milk-protein feeding in older adults—directly addressing sarcopenia, a leading contributor to loss of independence with age.

PMID 28283797 · Nrf2 & Skeletal Muscle Synthesis · 2017

STUDY 20 · VITAMIN C VS. PROTANDIM · EXERCISE ADAPTATION · 2018

Differential effects on skeletal muscle adaptation

A head-to-head comparison of traditional antioxidant supplementation (Vitamin C) versus Nrf2 activation (Protandim) on muscle adaptation to exercise, demonstrating that direct antioxidants and enzymatic Nrf2 activation produce meaningfully different—and sometimes opposite—effects on cellular adaptation.

PMID 29856263 · Vitamin C vs. Protandim · 2018

STUDY 21 · PHARMACOKINETICS / TOXICOLOGY · 2019

Non-toxic: no accumulation; pharmacokinetics confirmed

LC-MS/MS analysis of EGCG, silibinin, and curcumin after oral dosing of Protandim confirmed pharmacokinetics and tissue distribution with no toxic accumulation. Protandim is a safe nutraceutical with no evidence of toxicity across studies.

PMID 30904740 · Pharmacokinetics & Tissue Distribution · 2019

STUDY 22 · VASCULAR HEALTH · HIGH-SODIUM DIET · 2019

Nrf2/Protandim neutralizes salt-induced vascular dysfunction

Protandim attenuated salt-induced vascular dysfunction and microvascular rarefaction—the pathological reduction in small blood vessel density from a high-sodium diet—directly relevant to hypertension and cardiovascular risk.

PMID 31132190 · Nrf2 Attenuates Salt-Induced Dysfunction · 2019

STUDY 23 · HEALTHY AGING INTERVENTIONS · 2020

Healthy aging interventions reduce repetitive element transcripts

Protandim was included among healthy aging interventions tested for the ability to reduce repetitive element transcripts—a novel epigenetic biomarker of aging. Reduction is associated with improved genomic stability and healthier cellular aging.

PMID 33257951 · Repetitive Element Transcripts & Aging · 2020

STUDY 24 · ALS / LOU GEHRIG'S DISEASE · ALSUNTANGLED · 2016

Peer-reviewed ALSUntangled evaluation

ALSUntangled formally reviewed and published an evaluation of Protandim for ALS. Duke University is additionally conducting ongoing research on an individual with ALS who has been thriving for years while using Protandim.

PMID 26414415 · ALSUntangled No. 31: Protandim · 2016

STUDY 25 · PULMONARY HYPERTENSION · 2012

Nrf2 & antioxidant treatment in pulmonary hypertension

Examined the role of antioxidants and Nrf2 for treatment of severe angioproliferative pulmonary hypertension—a serious vascular condition marked by high right-heart pressure and progressive failure.

PMID 22870869 · Antioxidants for Pulmonary Hypertension · 2012

STUDY 26 · ALCOHOL USE DISORDERS · 2012

Alveolar epithelial permeability study

Examined whether Protandim influences alveolar epithelial permeability or intrapulmonary oxidative stress in human subjects with alcohol use disorders—a population with chronically elevated pulmonary oxidative stress.

PMID 22268125 · Protandim & Alcohol Use Disorders · 2012

STUDY 27 · ORAL / PERIODONTAL ENVIRONMENT · 2012

Antioxidants in the oral environment & periodontal health

Examined antioxidant approaches for the oral environment, including periodontal health, where oxidative stress contributes to gum disease, tissue inflammation, and microbiome dysbiosis. Nrf2 activation represents a novel systemic approach to oral health.

PMID 22813079 · Antioxidants in the Oral Environment · 2012

STUDY 28 · OUTER HAIR CELL SURVIVAL · 2016

Partial rescue of outer hair cells via Nrf2 activation

Examined outer hair cell survival in the context of Nrf2 activation. Outer hair cells are critical for hearing and highly vulnerable to oxidative damage, noise, and ototoxic drugs—making Nrf2 activation a potential protective mechanism for hearing.

PMID 26682723 · Outer Hair Cell Survival · Nrf2 · 2016

STUDY 29 · MAYO CLINIC · TRANSLATIONAL STUDY · PUBLISHED

Ovarian cancer — translational nutraceutical study

Mayo Clinic examined Protandim as a nutraceutical approach to ovarian cancer, building on established connections between oxidative stress dysregulation and carcinogenesis. Peer-reviewed and published.

Mayo Clinic · Translational Studies of Protandim · Published

STUDY 30 · JOHNS HOPKINS UNIVERSITY · LUNG CANCER · 2009 / 2017

Johns Hopkins lung cancer research

Johns Hopkins examined Protandim in the context of lung cancer biology, adding to the growing cancer research portfolio alongside LSU, Mayo Clinic, and the University of Colorado.

Johns Hopkins University · Lung Cancer · 2017

STUDY 31 · WASHINGTON STATE UNIVERSITY · 2015

Nrf2: "most extraordinary breakthrough in the history of medicine"

A comprehensive reference listing diseases preventable or treatable by raising Nrf2. Direct quote: **"Nrf2 could well become the most extraordinary therapeutic and preventive breakthrough in the history of medicine."**

Washington State University · Nrf2 Master Regulator · 2015

STUDY 32 · NRF2 REFERENCE SCIENCE · PUBLISHED

Nrf2: guardian of healthspan & gatekeeper of species longevity

A foundational reference establishing Nrf2 as a "guardian of healthspan" and "gatekeeper of species longevity"—connecting Nrf2 activity to the mechanisms that distinguish long-lived species from short-lived ones.

Nrf2 — Guardian of Healthspan / Gatekeeper of Species Longevity · Published

STUDY 33 · 2016 RESEARCH SUMMARY · MULTIPLE STUDIES

2016 summary: MS brain protection · osteoarthritis · 7% lifespan

A summary of three landmark 2016 studies: Protandim Nrf2 protects brain cells in multiple sclerosis, protects cartilage in osteoarthritis, and extends lifespan 7% in the NIA's 10-year federally funded program.

2016 Research Summary · Compiled by Joanne Shearer Parkin

EXPANDED PRODUCT SCIENCE · NRF1 · NAD+ · COLLAGEN

STUDY 34 · COLORADO STATE UNIVERSITY · AMERICAN JOURNAL OF PHYSIOLOGY · 2019

NRF1: mitochondrial biogenesis & exercise response

NRF1 is identified as the master regulator of mitochondrial biogenesis—the body's process of creating new, healthy mitochondria, which govern energy, metabolic rate, cognitive clarity, and exercise recovery. NRF1 activation drives mitochondrial biogenesis and enhances the adaptive exercise response.

Colorado State University · American Journal of Physiology · 2019

STUDY 35 · NATURE METABOLISM / PUBMED CENTRAL · 2024

NAD+ declines 10–80% with age—the longevity molecule

NAD+ is essential for cellular energy, DNA repair, and sirtuin activation, and declines 10–80% with age depending on tissue type. NAD+ decline is now considered a hallmark mechanism of biological aging, driving fatigue, cognitive decline, and reduced cellular repair capacity.

10–80%

NAD+ DECLINE WITH AGE

PMID 37848251 · Nature Metabolism / PMC · 2024

STUDY 36 · LIFEVANTAGE INTERNAL RESEARCH (RNA SEQUENCING) · 2023

Nrf2 + Liquid Collagen: 13,708 genes influenced across 18,671 pathways

LifeVantage's 2023 RNA-sequencing study on human fibroblasts found **13,708 genes influenced across 18,671 cellular pathways**. Combining Protandim Nrf2 with TrueScience Liquid Collagen **synergistically influenced 2,439 genes (p<0.05)**—a true synergy seen with neither product alone—across collagen structure, connective tissue, and the cellular stress response. The basis of US Patent 12,589,067 and the Healthy Glow Essentials stack.

13,708
GENES INFLUENCED

2,439
SYNERGISTIC COMBO

18,671
PATHWAYS

LifeVantage Internal Research · 2023 · basis of US Patent 12,589,067

U.S. PATENT PROTECTION

Ten issued U.S. patents across compositions, methods, topical, and collagen formulations. LifeVantage trades publicly on NASDAQ: LFVN.

US 7,241,461 B2	Compositions for alleviating inflammation and oxidative stress in a mammal.
US 7,384,655 B2	Preparation of compositions to alleviate inflammation and oxidative stress in a mammal.
US 7,579,026 B2	Methods for enhancing antioxidant enzyme activity and reducing C-reactive protein levels.
US 7,923,045 B2	Compositions for alleviating inflammation and oxidative stress in a mammal.
US 8,221,805 B2	Compositions for alleviating inflammation and oxidative stress in a mammal.
US 8,435,574 B2	Compositions for alleviating inflammation and oxidative stress in a mammal.
US 9,265,808 B2	Compositions for alleviating inflammation and oxidative stress in a mammal.
US 9,889,171	**TrueScience topical.** Nrf2-activating topical / skincare composition.

US 11,484,563 B2	**Tri-Synergizer.** Compositions and methods for activating cellular signaling pathways—covers Nrf2, NRF1, and NAD pathway activation. Composition includes milk thistle, ashwagandha, green tea, bacopa monnieri, turmeric, acetyl-L-carnitine, quercetin, coenzyme Q10, wasabi, theacrine, copper, and niacin. Issued Nov. 1, 2022 · LifeVantage Corporation.
US 12,589,067	**Healthy Glow.** Nrf2 activation combined with Liquid Collagen. Issued March 31, 2026 · LifeVantage Corporation.

RESEARCH INSTITUTIONS

Harvard University · Ohio State University · Louisiana State University · University of Colorado · Colorado State University · Mayo Clinic · Johns Hopkins University · Washington State University · Virginia Commonwealth University · Duke University · University of Wisconsin · National Institute on Aging (NIA) · National Institutes of Health (NIH) · American Heart Association · Biogen Idec · NASDAQ: LFVN

Independent LifeVantage Consultants

Search "Protandim" at pubmed.ncbi.nlm.nih.gov for the complete research library. Study summaries are paraphrased for clarity; always refer to the original publications.