

The Latest Research in How to Stay Healthy and Young Throughout the Lifespan

What am I doing?

I have the following ongoing studies:

1. Ribraxx on immunological functioning and metabolic syndrome in adults with HIV
2. Ribraxx on immunological functioning, inflammation, and oxidative stress in adults with non-alcoholic fatty liver disease
3. Detection of retinopathy through autonomic nervous system functioning with galvanic skin response, bioelectrical impedance, and sudomotor assessment
4. A comparison of high-fat versus low-fat diets on inflammation and quality of life in inflammatory bowel disorder

What am I doing?

5. Aerobic and strength training exercise on cognitive functioning, fitness, quality of life, and BDNF in stroke survivors
6. Pulsed electromagnetic frequency on inflammation, pain severity, and quality of life in chronic knee pain
7. Magnesium sulfate infusion on depression symptoms, quality of life, and cardiac functioning
8. Aerobic and strength training exercise on quality of life, fitness level, and body composition among adults with HIV

Why do we age?

Why do we go from this 

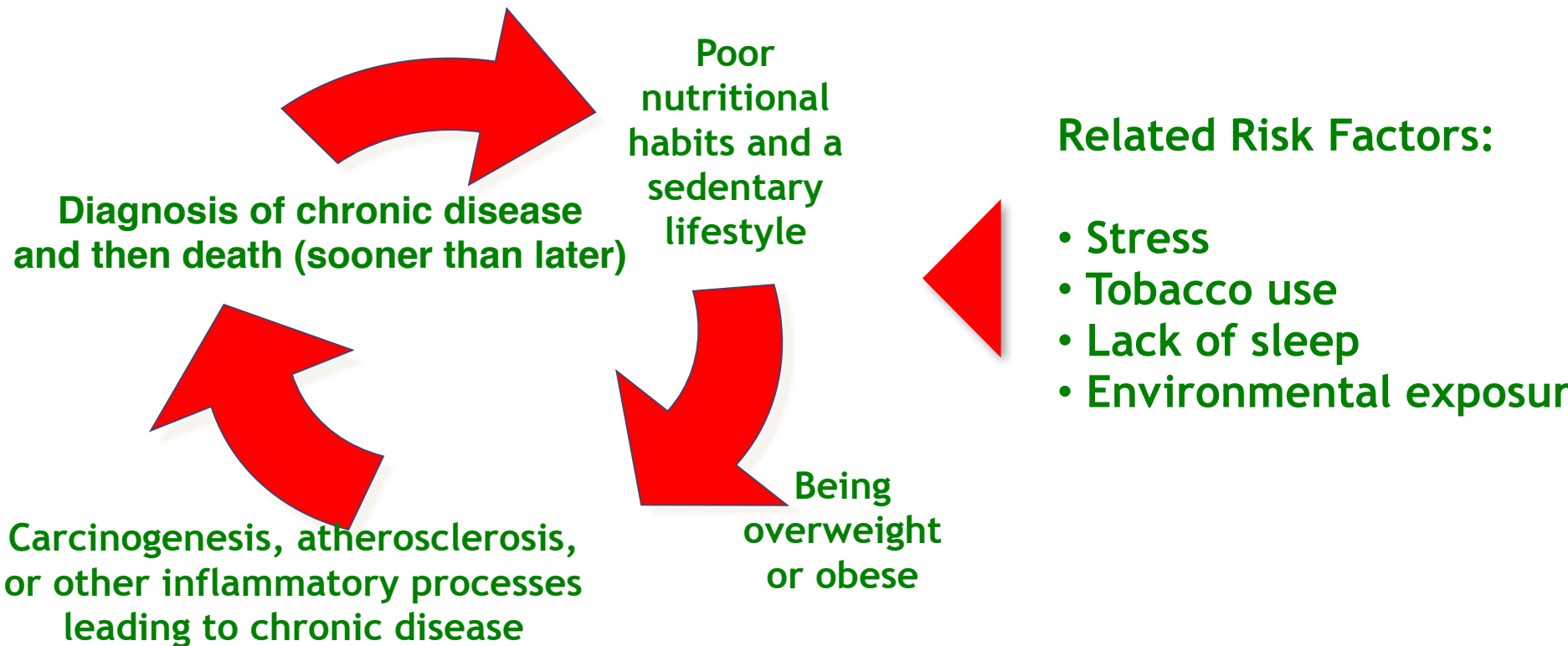


 to this...?

Key Factors in Aging

- Inflammation
- Oxidative stress
- DNA damage
- Increase in free radicals
- Telomere shortening
- Changes in gene expression
- Misfolded protein aggregates
- Diminished stem cell proliferation
- Exposure to radiation and other toxins
- Being sedentary
- **Poor nutrition and dietary habits**

The Vicious Cycle of Poor Behavior and Chronic Disease



“Inflammaging”



Immunosenescence

Immunosenescence, or the gradual deterioration of the immune system, is a risk-factor for age-associated diseases, and poor nutrition is a key factor in its development.

Krabbe K, Pedersen M, Bruunsgaard H. Inflammatory mediators in the elderly. *Exp Gerontol.* 2004;39(5):687–99.
Rink L, Cakman I, Kirchner H. Altered cytokine production in the elderly. mechanisms of ageing and development. *Mech Ageing Dev.* 1998;102(2-3):199–209.
Centers for Disease Control and Prevention. The burden of chronic diseases and their risk factors: national and state perspectives 2004. Atlanta, GA: U. S. Department Of Health and Human Services; 2004.
Gonzalez C. Nutrition and cancer: the current epidemiological evidence. *Br J Nutr.* 2006;96(SUPPL 1):S42–S5.
Anderson J, Baird P, Davis R, Jr , Ferreri S, Knudtson M, Koraym A, et al. Health benefits of dietary fiber. *Nutr Rev* 2009;67:188–205.
Mente A, de Koning L, Shannon H, Anand S. A systematic review of the evidence supporting a causal link between dietary factors and coronary heart disease. *Arch Intern Med.* 2010;169:659-69.

(Premature) aging leads to:

- **Obesity**
- **Cardiovascular disease**
- **Type 2 diabetes**
- **Cancer**
- **Osteoporosis**
- **Arthritis**
- **Chronic pain**
- **Mental health disorders like depression**



Globally, we have **epidemics** of these diseases and disorders.

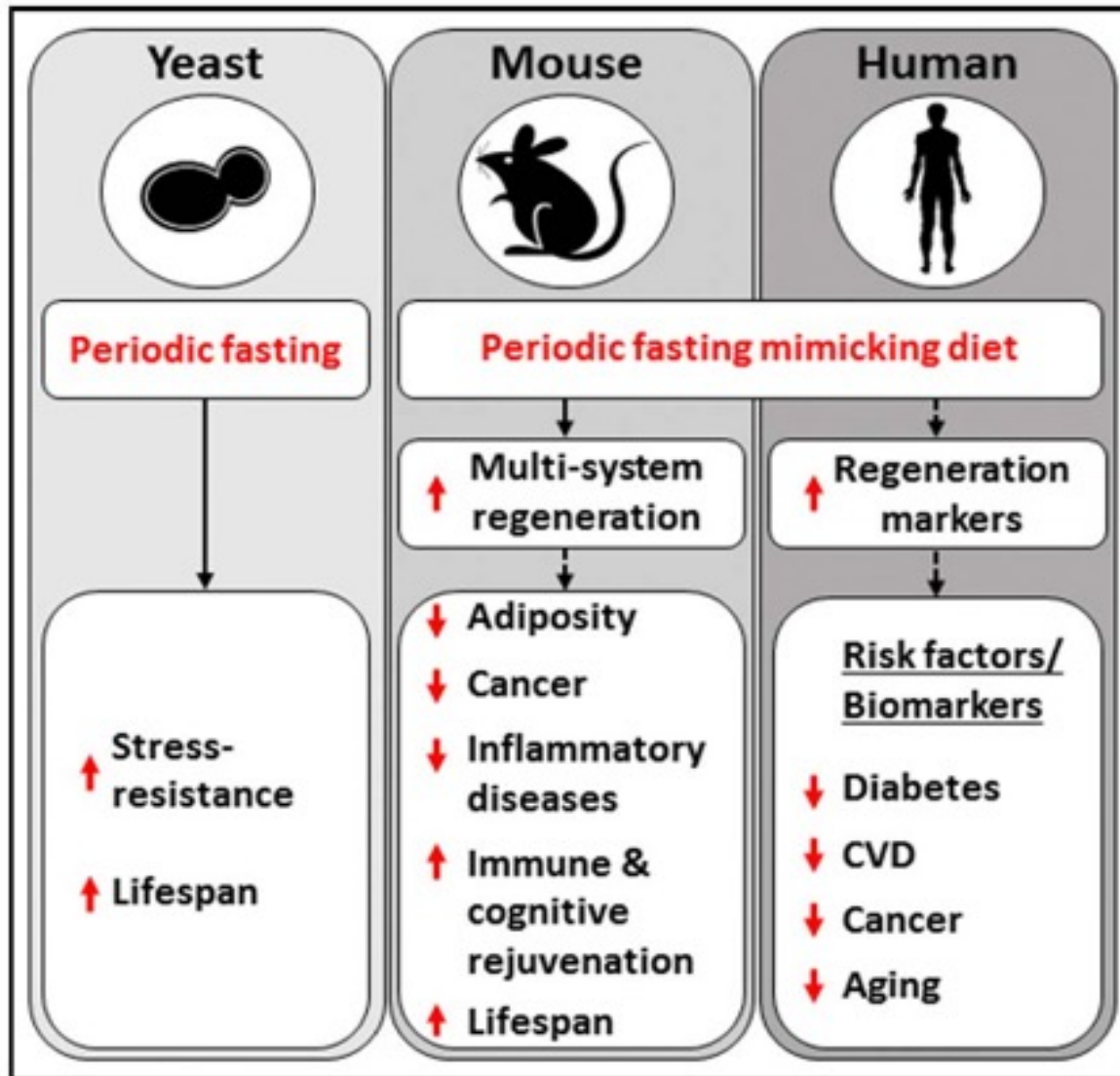
While no cure for mortality exists, we can remain healthy, vigorous, strong, and cognitively lucid across the lifespan through the power of nutrition.

The science is clear that proper nutrition is the number one behavior to counteract the deleterious effects of aging.

What is proper or optimal nutrition?

- **We need lots of key nutrients, e.g., amino acids, fatty acids, polysaccharides, vitamins, minerals, and other co-factors and enzymes to be healthy.**
- **Other, phytochemicals play a crucial role in health status.**
- **Thus, multiple nutrients synergistically produce effects that individual nutrients cannot and offers a model to consider for your dietary approach.**

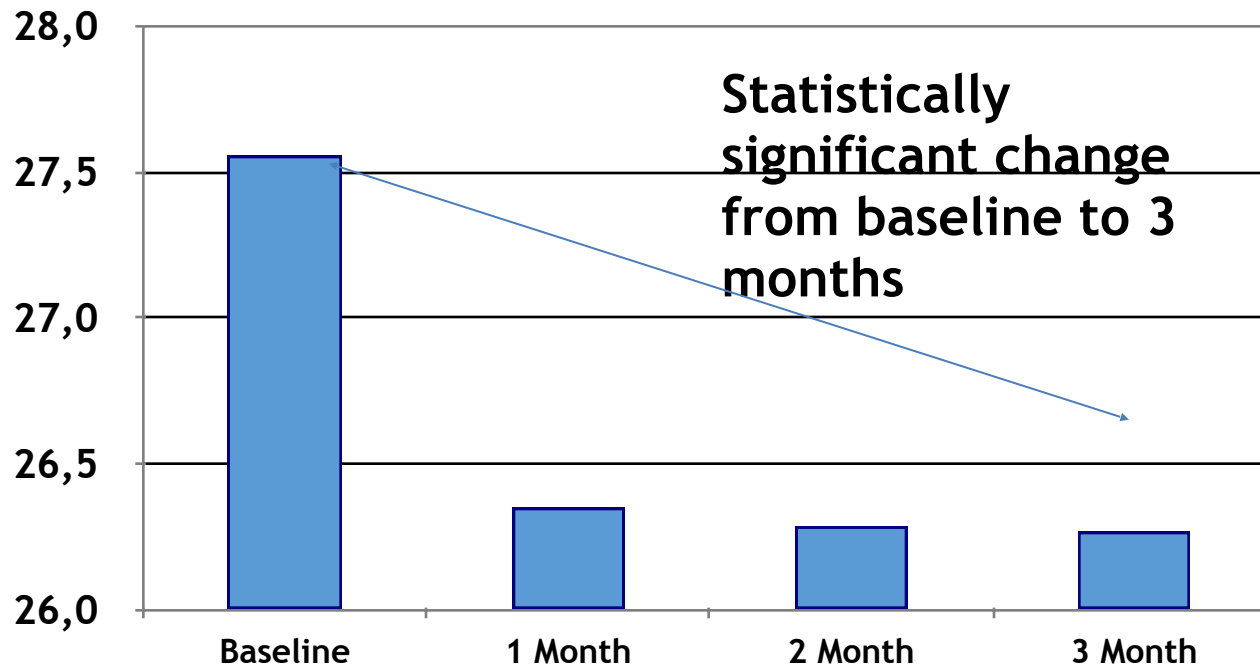
Fasting as an anti-aging strategy?



Fasting has been shown to have remarkable effects, but may be practically difficult for most people.

Eliminating immunologically-reactive foods as an anti-aging strategy?

BMI from Baseline to 3-Month Follow-Up



Eliminating IgG reactive foods also:

↓ waist circumference
↓ hip circumference
↓ diastolic BP

↑ quality of life

Are types of foods linked to disease and/or mortality?

Recent epidemiological studies among large populations suggest:

- Those that consumed the most animal protein compared to plant protein had a higher risk of death, particularly cardiovascular disease.
- When 3% of energy from plant protein was substituted for an equivalent amount of processed red meat protein, the risk of death was 34% lower.
- When data were adjusted only for age, total energy and fat intake, those consuming the most plant protein were found to have 33% reduced risk of death, 40% reduced risk of cardiovascular death, and 28% reduced risk of cancer death.

Thus, eat more
of these →



← and eat less or none
of these.



What about specific foods or nutrients and their relationship to various indicators of health, disease, or death?

Vitamin C

- **Vitamin C has long been recognized as a key antioxidant and known for being key to many metabolic pathways.**
- **A recent study investigated the effect of 1 month supplementation of 500 mg/day of vitamin C on various biomarkers.**
- **The results showed that serum lipid peroxide and nitrite levels significantly decreased (*oxidative stress*) and erythrocyte superoxide dismutase and catalase significantly increased (*antioxidant status*).**

Vitamin A

- **Vitamin A has long been associated with deficiencies during pregnancy leading to a host of disorders.**
- **This study evaluated the effect of vitamin A (as retinyl palmitate 25,000 IU per day) supplementation for 6 months in MS patients for the expression of IFN- γ and T-bet genes.**
- **At 6 months, expression of IFN- γ and T-bet was significantly decreased, thus modulating the impaired balance of Th1 and Th2 immune cells.**

Vitamin E

- **Vitamin E has long been known to provide antioxidant benefit and is moderately related to improved cognitive functioning.**
- **This study investigated the effects of vitamin E supplementation 1,200 IU per day for 12 weeks on biomarkers of kidney injury, inflammation, and oxidative stress in patients with diabetic nephropathy.**
- **At 12 weeks, vitamin E supplementation showed significant decreases in urine protein, TNF- α , malondialdehyde, advanced glycation end products, and insulin concentrations compared to placebo.**

Manganese, Selenium, and Zinc

- **Minerals have many synergistic effects, particularly for the prevention of many chronic diseases.**
- **This study assessed the effects of an antioxidant micronutrient formula, including 200 μ g l-selenomethionine, 60 mg zinc, and 5 mg manganese daily for 4 months on oxidative and inflammatory biomarkers in patients with a history of sporadic colorectal adenoma.**
- **Plasma TNF- α (by 37%) and cysteine (by 19%) decreased relative to the placebo group, suggesting that these antioxidant micronutrients can modulate biomarkers of oxidative stress and inflammation.**

Lycopene

- **Lycopene is well-known in red fruits and vegetables, particularly tomatoes. This carotenoid has very strong antioxidant properties, reduces the risk of cancers, retards the growth of the tumors, and helps to prevent cardiovascular disease and osteoporosis.**
- **Cardiovascular disease patients were randomized to either 7 mg lycopene or placebo daily for 2 months and were assessed for endothelial functioning.**
- **According to venous plethysmography, endothelium-dependent vasodilatation significantly improved by 53% in the lycopene group at the end of the study.**

Coenzyme Q10

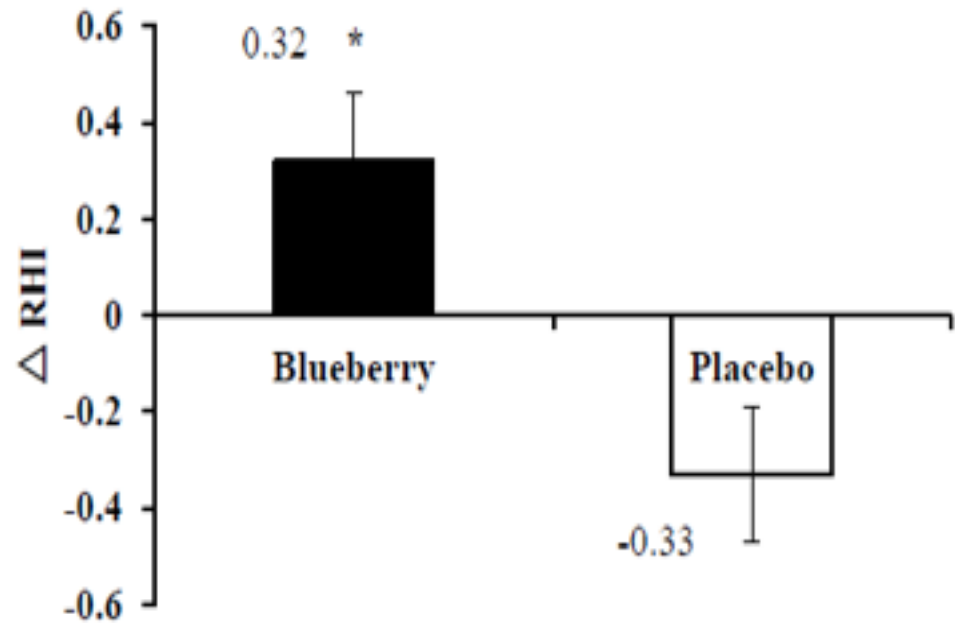
- **CoQ10's most prominent role is to facilitate ATP production in the mitochondria within the electron transport chain, and its natural production declines as we age.**
- **In the present study, patients with rheumatoid arthritis received either 100 mg per day of CoQ10 or placebo for 2 months and were assessed for inflammatory and oxidative stress markers.**
- **Malondialdehyde (oxidative stress) and TNF- α (inflammation) were significantly reduced at the end of the study.**

Omega-3 Fatty Acids

- **Many studies on the link between omega-3 fatty acid consumption and cardiovascular disease risk are controversial because they typically rely on self-report.**
- **A recent analysis evaluated biomarkers of seafood-derived EPA, DPA, and DHA and plant-derived ALA with incident coronary heart disease from 19 studies/45,000+ subjects.**
- **The results showed that ALA, DPA, and DHA in phospholipids and total plasma were associated with a lower relative risks of fatal coronary heart disease.**

Blueberry

- **Blueberries have many known health benefits, particularly for their various antioxidant effects.**
- **This study assessed the effects of a twice-daily blueberry smoothie on blood pressure, insulin, and endothelial functioning (total phenolics, 774 mg and anthocyanins 290 mg) compared to placebo.**



Green Tea

- **Green tea is high in polyphenols, including catechins, which have antioxidant activities and are known to benefit cardiovascular health.**
- **In the present study, green tea catechins (1 g total per day) were evaluated in LDL cholesterol oxidation compared to placebo.**
- **Marked increases of the plasma concentrations of catechins were observed. Thus, total antioxidant capacity was increased, and the LDL oxidizability was significantly reduced by the ingestion of these catechins, which is significant for reducing atherosclerosis and eventual cardiovascular disease.**

Cranberry

- **Cranberry is best known for its role related to urinary tract infections, but due to its high phenolic content, it can exert other anti-inflammatory health benefits.**
- **Subjects completed an 8 week intervention consuming either low-calorie cranberry juice (173 mg of phenolic compounds) or a matched placebo beverage twice daily and were assessed for various cardiometabolic risk markers.**
- **The low-calorie cranberry juice group showed significant improvements in several biomarkers, including circulating triglycerides, C-reactive protein, glucose, insulin resistance, and diastolic blood pressure.**

Chia Seed

- **Chia seed contains a high amount of omega-3 alpha linolenic acid and omega-6 linoleic acid. It is also high in protein, fiber, minerals, vitamins, and antioxidants.**
- **Patients with metabolic syndrome were randomized to a beverage containing chia and other foods to a placebo for 2 months.**
- **Subjects consuming the chia-containing beverage lost weight and showed reductions in triglycerides and blood glucose.**

Safflower Seed

- **Safflower seeds are high in polyphenols, of which have been shown to have potent antioxidant properties, antitumor activity, and protective effects against post heart attack dysfunction.**
- **Subjects with high-normal blood pressure or mild hypertension who were not undergoing treatment received safflower seed (70 mg per day) or placebo for 12 weeks, and arterial functioning was measured before and after intervention.**
- **A vascular age estimation improved in the safflower group compared to placebo and a trend toward a lower malondialdehyde-modified-LDL autoantibody titer at 12 weeks from baseline also occurred, suggesting long-term ingestion of safflower could help to improve arterial stiffness.**

Blackcurrant

- **Blackcurrent is known for having great anti-oxidant potential due to polyphenol content and has also been shown to have anti-carcinogenic potential as well.**
- **The effects of blackcurrant on oxidative stress and vascular function were assessed in a placebo-controlled 6-week study of 66 healthy adults who habitually consume <2 portions of fruit and vegetables per day.**
- **Flow-mediated dilation and plasma vitamin C increased significantly compared to placebo. F2-isoprostane concentrations were significantly lower. Thus, consumption of blackcurrant high in vitamin C and polyphenols can decrease oxidative stress and improve vascular health.**

Grape Seed

- **Grape seed is reported to improve oxidative stress and lipid profile as a potent antioxidant.**
- **Overweight or obese females were randomly assigned into either the intervention group consuming 15% of energy from grape seed oil or a control group for an 8-week weight loss diet. Fasting serum glucose, insulin, C-reactive protein, and TNF- α were assessed before and after the intervention.**
- **Insulin resistance, C-reactive protein, and TNF- α decreased in the grape seed oil group at the end of the intervention, suggesting an overall improved inflammatory profile.**

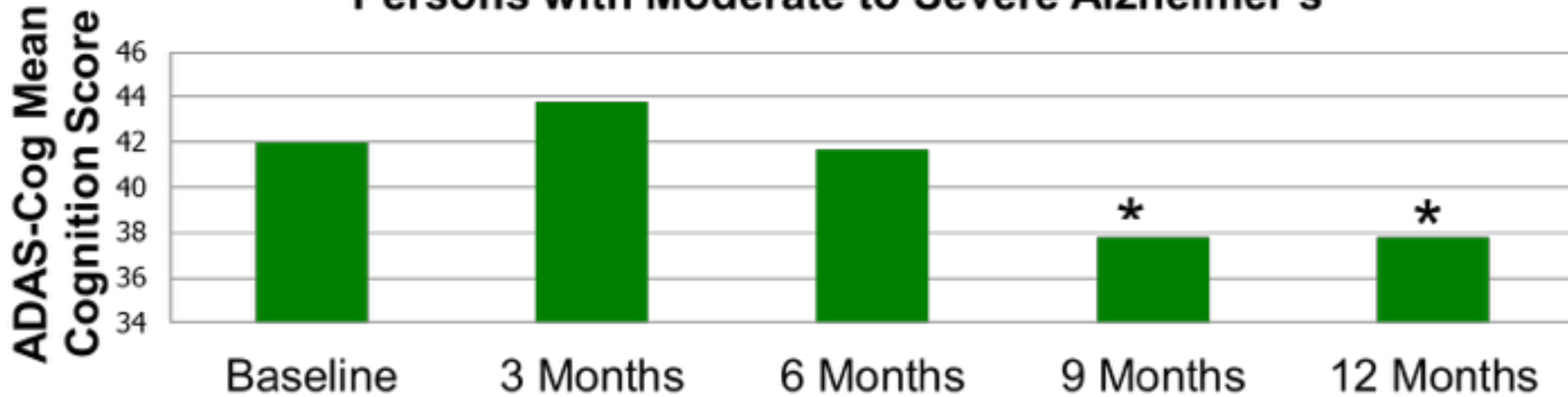
Curcumin

- Curcumin (an extract of turmeric) might be the most researched nutrient or food in the world (over 9,400 articles on PubMed to date) has been found to have antioxidant and anti-inflammatory properties.
- Various molecular targets modulated by curcumin include transcription factors, growth factors and their receptors, cytokines, enzymes, and genes regulating cell proliferation and apoptosis. It also suppresses initiation, progression, and metastasis of a variety of tumors.
- Anticancer effects are predominantly mediated through its negative regulation of various transcription factors, growth factors, inflammatory cytokines, protein kinases, and other oncogenic molecules. It also inhibits proliferation of cancer cells by arresting them at different phases of the cell cycle and/or by inducing their apoptosis.

Aloe Polymannose Multinutrient Complex

Polysaccharides are highly potent immunomodulators.

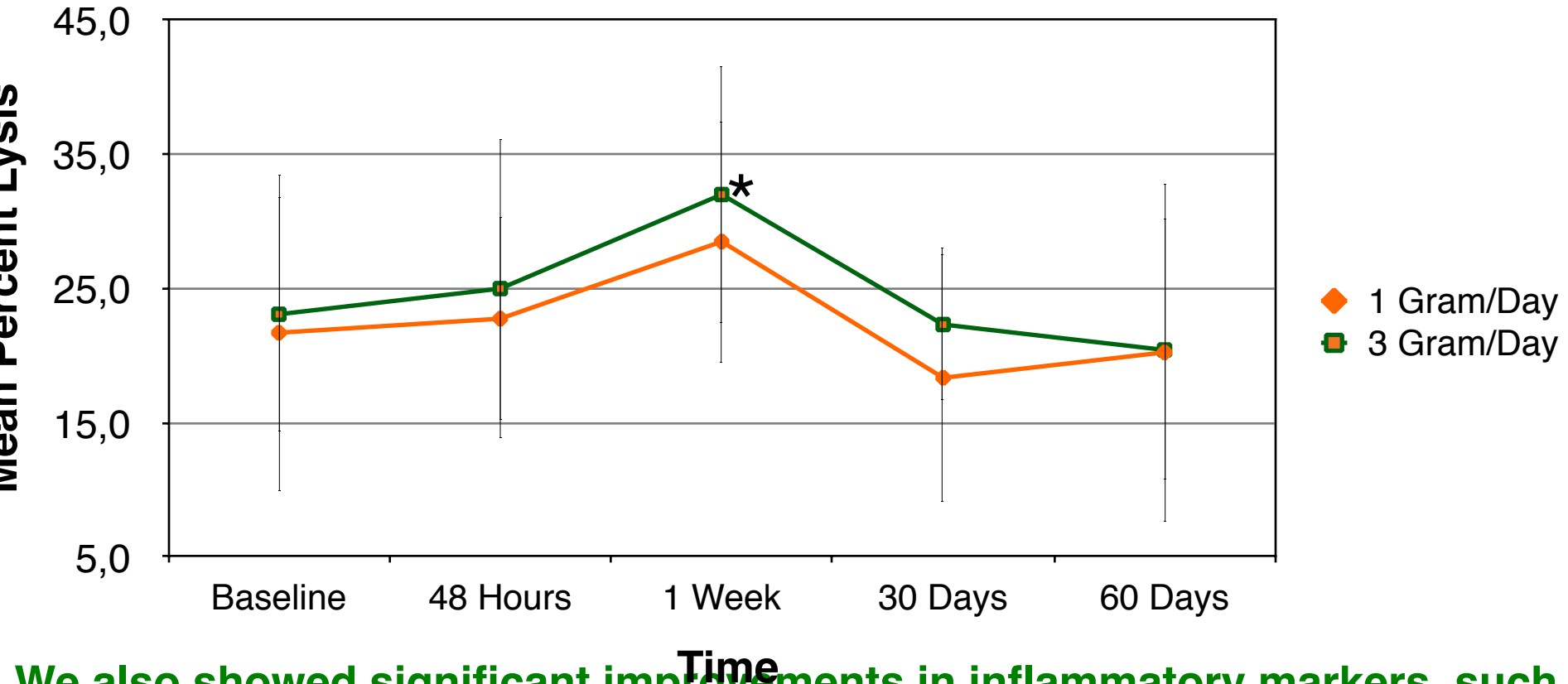
ADAS-Cog Cognition Score from Baseline to 12 Months in Persons with Moderate to Severe Alzheimer's



We also showed significant changes in inflammation (TNF- α and VEGF) and adult stem cell proliferation (CD14+).

RBAC Oligosaccharide

NK Cell Detection (Flow Cytometry and K562) from Baseline to 60 Days



We also showed significant improvements in inflammatory markers, such as VEGF, IL-6, MCP-1, and TNF- α .

*Ali, K. H., Melillo A., Leonard S., Asthana, D., Woolger, J. M., Wolfson, A. H., McDaniel, H.R., & Lewis, J. E. (2012). An open-label, randomized clinical trial to assess the immunomodulatory activity of a novel oligosaccharide compound in healthy adults. *Functional Foods in Health and Disease*, 2(7), 265-279.

The Effect of RBAC Treatment on Tumor Volume in Hepatocellular Carcinoma

Treatment	Tumor volume (cm ³)	Patients		Treatment		% Change
		Number	%	Before	After	
IT	≤200	17	57	92.7±12.3	97.6±35	+5%
	>200	13	43	460.4±76.1	454.9±106.7	-1%
	10-1320 [†]	30	100	252.0±258.7	252.5±324.3	+0.2%
IT+ RBAC	≤200	22	58	125.9±13.6	94.1±22.3	-25%
	>200	16	42	481.7±56.6	288.3±47.9	-40%
	12-1200 [†]	38	100	275.7±234.1	175.8±174.9	-36%

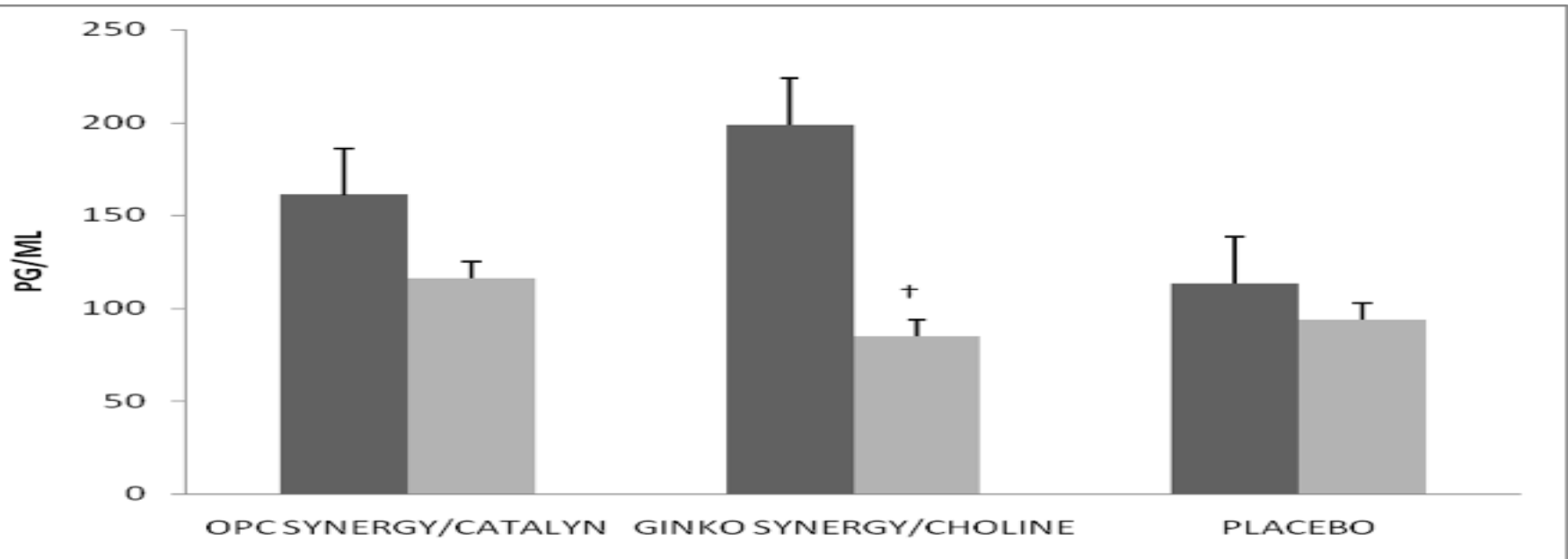
[†]Range of tumor volumes in group.

The combination of IT + RBAC resulted in the greatest reductions in tumor size after treatment. Data represent the mean and SD.

Bang, MH, Van Riep, T, Trinh, NT, et al. (2010). Arabinoxylan rice bran (MGN-3) enhances the effects of interventional therapies for the treatment of hepatocellular carcinoma: a three-year randomized clinical trial. *Anticancer Research*, 30, 5145-5151.

Ginkgo biloba and Choline

Epidermal Growth Factor at Baseline and 6 Months

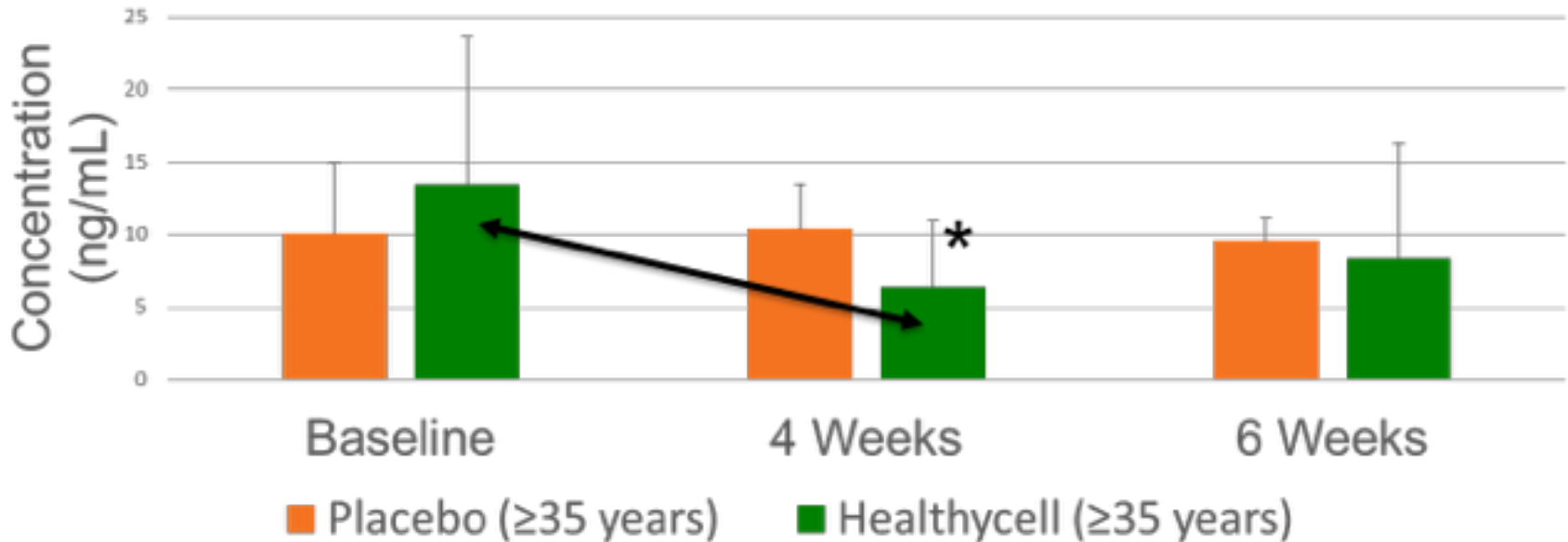


We also showed moderate improvements in cognitive functioning.

•Lewis, J. E., Melillo, A., Tiozzo, E., Chen, L., Leonard S., Howell, M., Diaz, J., Gonzalez, K., Woolger, J., Konefal, J., Paterson, E., & Barnes, D. (2014). A double-blind, randomized clinical trial of dietary supplementation on cognitive and immune functioning in healthy older adults. *BMC Complementary and Alternative Medicine*, 14, 43, DOI: 10.1186/10.1186/1472-6882-14-43.

Multi-nutrient complex, including resveratrol, L-arginine, L-citrulline, CoQ10, phenols, flavonoids, carotenoids, and several vitamins and minerals

8-hydroxydeoxyguanosine (a marker of DNA damage)



We noted several consistent findings, such as the pro-inflammatory cytokines IL-1 α and IL-2 decreased, while the anti-inflammatory cytokine IL-5 and soluble receptors sTNFR-I and sTNFR-II increased.

Conclusions

- Nutrition is unquestionably the **number 1 factor** related to the prevention of age-related chronic diseases and death.
- Optimal nutrition includes eating a predominantly whole-food, plant-based diet and including dietary supplements of key importance.
- Many nutrients may be missing from the modern, which is why dietary supplements are so important.
- Persons who are already in a compromised health status will likely not be able to get enough nutrition from food alone to give the body a chance to repair and restore itself.
- Concentrated nutrients work because of the Michaelis–Menten Substrate Supply Dynamics model.
- Purchasing dietary supplements should be similar to other consumer decisions in terms of evaluating the quality of the product.

Your Health is Your Number 1 Priority!

No cure for mortality exists, but you can optimize your health for your entire life if you give your body (cells) the proper materials it needs to maintain itself and its critical functioning.

You do that through the power of nutrition!

Thank you for your attention.

