

## ABSTRACT

Abstract: When I was a relatively new biochemistry professor in the 1980s, I was elected to the American Society of Nutrition (ASN) for my discovery of the optimum dosage of vitamin C to saturate blood plasma, 500 mg twice a day. That is the dosage taken by millions of Americans after it was the banner headline of USA Today Oct. 18, 1994. At the Feb. 28, 2023 LPI symposium on vitamin C, the speaker Anitra Carr stated that she takes 500 mg twice a day.

A key issue identified then by ASN was that despite the publication of the American Journal of Clinical Nutrition and the Journal of Nutrition, members of the Society and researchers were not effectively communicating evidence for healthier nutrition choices to the general public.

At that point, in the 1990s, I began writing a free Nutrition Newsletter. Later, I began compiling those letters into a nutrition website, Nutritioninvestigator.org. Since becoming emeritus in 2016, I continue the newsletter and website, with information linked to peer-reviewed articles. It contains a search box to explore the site. There are indices about nutrients, diseases, the supplements I consume and why I take them, the causes of aging and how to slow those processes.

The newsletter has 1,000+ subscribers. One emails ordman@beloit.edu, SUBJ: nutrition. For reader questions, I search peer-reviewed literature for answers. I conducted a reader survey to determine how the newsletter can be improved, and its effect on readers.

Decades ago a study stated that people who read legitimate information about nutrition on a weekly basis have an additional seven years of good health. It is wonderful that the Linus Pauling Institute has a web site, symposia, and outreach programs to spread legitimate nutrition information.

## INTRODUCTION

What obligation do nutrition researchers have to educate the public about their results? How can we educate the public about healthy nutrition? The American Society of Nutrition challenged members back in the 1980s. Beyond publishing our research, we should try to educate the public about legitimate information. With the deluge of advertising for sodas and sweets, and the lack of information from the Federal Government, we were challenged to get the word out that there are wise choices for what to eat and how to eat.

I was a liberal arts college assistant professor teaching biochemistry. My research interest was human aging. The free radical theory of aging of Denham Harman (Harman, 1981) led me to investigate how much vitamin C a person should consume. I discovered and published (King, 1984) the oral dosage of vitamin C that saturates the blood, 500 mg twice a day. My compatible goals became to investigate human aging, and to inform my students(Beloit, 1986), the public(Ordman, 2022) and professionals(Ordman, 2020, 2019) how to extend their healthspan.

## METHODS

First step was to contact the media. I networked to a reporter for USA Today, that led to a banner headline on page 1 (Figure 1). That headline led to many interviews with various media.

I then began a website at Beloit College. Even 40 years later, when I became emeritus, I continue to augment the site, now over 700 pages. It is written for non-professionals. It contains a key word search command so one can find many recent articles on health, aging, disease, and consciousness.

Next I began a newsletter. Initially I developed the style sending it to students and colleagues. This newsletter has evolved steadily to address reader concerns and questions. I recently did a monkey survey of the thousand plus weekly readers (Table 5).

## RESULTS

Daily values prevent short term disease, but are not selected to maintain a long healthspan. Efforts to educate about vitamin C have succeeded, with evidence at the Feb. 28, 2023 LPI symposium on vitamin C. The speaker Anitra Carr stated that she takes 500 mg twice a day. Maret Traber at LPI was among the first to recommend an upper limit for nutrients in addition to the Daily Value. Upper limits for vitamin E and vitamin D are much higher than daily values.

My website has many sections linked on the Master Index (Table 1). Because of my interest in aging, I have many essays on the causes of aging, and how one can delay the decay those causes, primarily by nutrition and exercise (Table 2). One index lists all of the nutritional supplements I am aware of, with explanations of the pros and cons of taking them, with journal links for justified claims (Table 3). Another index compiles this information by disease, with information about how nutrition can affect the onset and progression of disease (Table 4). There is a link to the supplements I take and the journal articles supporting those choices (Table 5).

One can obtain my weekly nutrition newsletter by emailing ordman@beloit.edu, SUBJ: newsletter. I have over 1,000 subscribers. The index links issues for many decades,...The newsletter has a link on each issue so readers can unsubscribe. Each issue starts with short notes that fit a single computer screen. Below this are long notes. These are a longer explanation of each short note, with a link to a published source that comes from a legitimate organization with science-based information.

My survey of readers indicates their attention to the survey and their behavior that may have been influenced by staying informed (Table 6).

# HOW CAN WE EDUCATE THE PUBLIC ABOUT NUTRITION?

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## DISCUSSION

Greater adherence to healthy eating patterns is associated with a lower risk of death (Shan, 2023). The adverse health effects of high ultraprocessed food and drink (UPFD) consumption are well documented (3). In contrast with the prevailing notion that “a calorie is just a calorie”, there are clear differences, within and between individuals, in the metabolic response to different macronutrient sources (4). Dr. Michael Holick, Boston University endocrinologist, at the last LPI conference recommend at least 2,000 IU daily, explaining that most experts were taking 5,000. Yet a survey of LPI attendees showed less than half took vitamin D supplements. A review by Salas-Goves (2023) identified multiple knowledge gaps, strengths, and limitations in nutrition and exercise for the elderly, that can be a starting point to help build future study designs and interventions in the elderly (over 65).

I remind my newsletter readers that it is easier to stay healthy than to get healthy. The American Society of Nutrition long ago reported that simply reading about nutrition once a week extended healthspan by an average of seven years.

But the question remains, what might be the best strategies to get accurate nutrition information to people, to acknowledge mistaken advice and most importantly, to encourage changes in long-held behaviors? Websites, podcasts, more nutrition classes in medical schools, public service announcements, conversations, lectures on Public Television? How can we best share our knowledge?

It is wonderful that the Linus Pauling Institute has a web site, symposia, and outreach programs to spread legitimate nutrition information. While they produce a quarterly newsletter, might a weekly newsletter be possible? While because of DSHEA, only medical doctors can give nutrition advice. I have a disclaimer on all of my materials explaining that I am not giving advice, I am only reporting what is published in the scientific literature. It would be wonderful to read reports on efforts LPI staff are making to extend their healthspans.

## CONCLUSION

There remains a tremendous need to educate the public, including medical professionals, about scientifically-based nutrition information. Personal outreach by professionally educated individuals may contribute to meeting this need through websites and newsletters. A future Linus Pauling Symposium addressing how to meet this need would have tremendous value.

## Table 5: Supplements Roc takes with links to journal articles supporting those choices

\*conflict of interest – I benefit from sales of Mito-C and Triumph

Where I Buy it*	Why I Take it	When. take it	What it Costs per 28 days
alpha-keto-glutaric acid, 500mg X	X	pm	\$5.70
AREds	AREds.	am	\$2.70
Astaxanthin, 12 mg	Asta.	am	\$13.50
beta-hydroxybutyric acid n.d.	BHB	am	\$8.30
Ellagic acid 500 mg	Ella.	am	\$17.27
Fish Oil, 1 or 2 g	Fish	am	\$6.16
Genistein 125 mg (see hazard)	Gen.	Gen/hazard.	** \$32
Red grape juice	Juice	am	n/a
Leucine (as BCAAs) 1.2 g	leu	leucine.	\$8.97
Melatonin, 20 mg	Mela	pm	\$0.75
Mito-C**	* Mito	Mito am and pm.	\$32.62
Olive oil	Olive	Olive lunch	n/a
Resveratrol, 30 mg	Resv	am	\$4.48
Spermidine, 8 mg	Sperm.	Sperm	\$22.97
Spirulina, 1 g	Spir	Spir	\$3.30
SAME, 200 mg	SAME	SAME	\$8.00
Taurine, 1 g	Taurine	Taurine	\$3.08
Tocotrienols 50 mg	Toco	Toco Sunday	\$1.60
Triumph***	Tri	Tri 1st, 2nd, 15th, 16th day of each month	\$20.00
Vit B3, Niacin , 500 mg	B3	B3	am \$1.40
Vitamin B12, 500 mcg	B12	B12.	Sunday am \$0.23
Vitamin D, 2,000 IU	D	D	am \$0.56
yogurt/kefir, one sip			am n/a

Figure 1: USA Today, Oct 18, 1994



## Table 1: Master Index

1. Index all supplements – search here by specific supplement
2. Supplements Roc takes for a longer healthspan
3. Supplements Roc designed to reduce cancer, heart disease, arthritis and dementia risk
4. Index to diaries of specific details of people trying to extend their healthspan
5. Roc’s 64 steps for better healthspan– Conclusions to lead a long, healthy life
6. Index consensus project
7. Index Theories of why we age and how to extend healthspan
8. Index Basis for Nutrition Investigator . index First reads – suggestions for what this site is about
9. Index Diets and Fasting . Index Disease
10. Index Sports – carbo-loading, how to exercise, etc.
11. Index Pregnancy – legitimate studies on diet, exercise, early years of breast feeding for long term health
12. Index Research posters, readings, classes
13. Index Newsletters – headlines of nutrition research since 1990 from nutrition research linked to articles
14. Research posters by Roc and his students
15. Index to Supplements by age and gender which the scientific literature justifies for healthy individuals to take
16. Link to Old Beloit College website with effective searchcommand for prior to 2016

## Table 2: Aging Index – Causes of aging, and how to delay those causes

- WHY HUMANS AGE  
Introduction (2022): I have studied human aging since 1984 when little was known except the free radical theory I below, which led to my discovery that 500mg of vitamin C twice a day is required to saturate the blood with this vital antioxidant. The list of theories with strong evidence is expanding rapidly since 2000, as our population ages. Some are inter-related but focus on different aspects. They are numbered below
1. The free radical theory of aging: of Denham Harman
  2. Inflammation (or “Inflammaging” )
  3. Telomere shortening.
  4. The Translational Infidelity Error Theory of Aging of Rolf Martin
  5. Microbiome destruction
  6. Cellular Senescence
  7. Thymus failure
  8. Systemic length-associated transcriptome imbalance
  9. Deficiency in various vital molecules

## Table 3: Supplement Index - Underlined

Supplements have pros and cons of taking them, with Journal links

Supplements taken by Roc: [All linked – see [Products](#)]

alpha-ketoglutarate alpha lipoic acid (ALA) AREds BCAAs.. beta-hydroxybutyrate (BHB). cayenne/curcumin. Fish Oil – DHA and EPA  
Ellagic acid. Genistein Green tea or extract kefir olive oil melatonin Mito-C SAME. Spirulina. Taurine  
Triumph turmeric Vitamin B3 Vitamin B12 Vitamin C Vitamin D Vitamin E Vitamin K. yogurt/kefir

Other Supplements taken by other Gerontology Research Group members

Acidophilus L-alpha glycerylphosphorylcholine (GPC) ALCAR ALT711 anise powder (polyphenols) aspirin any astaxanthin Astragalus  
Azithromycin bacon beetroot powder berberine berry powder beta hydroxy-beta methyl butyrate betaine Blueberry extract Boswellia serrata Butyrate calcium  
Carnitine caffeine/coffee carnosine choline – a B-type-vitamin chondroitin cinnamon clover (polyphenols) Coenzyme Q, CoQ10, creatine Cruciferous  
Veg. cysteine dandelion Dasatinib DHA DHEA digestive enzymes dihydroquercetin EPA Epitalon Fiber supplement Fisetin folic acid Fruit Extracts Fucoxanthin  
fullerenes GABA Garcinia cambogia garlic GDF11 GDF15 GHK (glycyl-L-histidyl-L-lysine) ginger ginseng-Panax (Asian) vs American  
glucosamine glutathione glycine Gotu Kola Grape extract Ground clover (polyphenols) Hawthorn HMB = Leucine Metabolite huperzine-A  
Ibuprofeniron J147 jiogolan klotto krill oil lecithin leucine linolenic acid lithium lysine magnesium niemann methyl folate  
Milk Thistle Mito-C multivitamins mushroom of any type N-acetylcarnitine N acetylcysteine (NAC) NAD+ niacin nicotinamide  
Pau d’Arco pomegranate extract potassium POQ prebiotics pregnenolone prilosec probiotics Protandim Provinal pterostilben  
quercetin Rapamycin Resveratrol Rifaximin S-Adenosylmethionine saw palmetto schizandra selenium spermidine  
Statins TA-65 taurine Taxifolin theanine thiamine TMG tocotrienol trehalose. trimethylglycine tyrosine ubiquinol  
Vitamin B options. Vitamin B complex Vitamin B3 Vitamin B6 vitamin B7 Vitamin B12 Vitamin C Vitamin D Vitamin E Vitamin K zinc

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## Table 4: Disease index - Information about how nutrition can affect the onset and progression

These pages provide information to discuss with your health care provider about nutrition and practices to reduce risk, ameliorate, or prevent diseases. Note particularly the microbiome in the 21st century has been recognized to have a vital role in many diseases.

- Addiction. Arthritis Blood Circulation. Alzheimers
- Baldness for men and women. Cancer. Cholesterol Cocaine.
- COVID treatment. Diabetes. Crohn’s disease
- Depression Fibromyalgia Gout. Health links to other pages.
- Heart disease. Kidney Disease Knee replacement.
- Mental Health Microbiome Leg cramps Migraine Headache.
- Muscle Building Sarcopenia and muscle recovery Sepsis Stroke

## Table 6: SURVEY OF NUTRITION NEWSLETTER STYLE AND EFFECTIVENESS

1. How many of the weekly newsletters do you open per month: always 77% sometimes 23%
2. When you open them, do you read all of the short notes? Yes75% No25%
3. When a short note interests you, how often do you read entries in long notes: sometimes 46%, always 54%
4. Should the short notes be longer? 14% Shorter? 4% The same? 83%
5. Age: 28 to 82 yrs old
6. Gender:54% male. 46% female
7. Are you a health professional like doctor or nurse: 20% doctor 10% prof 6% nutrition education
8. Do you know Roc personally: 50% yes. 50% no
9. Do you sponsor the newsletter with a donation: 16% yes
10. Do you currently have any of the following conditions:
  - a. Obesity. 26%. b. Depression. 13%
  - c. Diabetes. 6.5%. d. Arthritis. 58%
1. Have you had any of the following:
  - a. Cancer. 53%. b. Heart disease. 21%
  - c. Sarcopenia (muscle wasting with age). 37%
  - d. Disturbing declining cognitive ability. 11%
1. Do you use Mito-C? 10% yes
2. If you use Mito-C:
  - a. My mental function has declined. 50%
  - b. My mental function has not declined. 50%
  - c. My arthritis has gotten worse? 17%
  - d. My arthritis has not gotten worse? 50%
3. Do you use Triumph? 4%
4. If you use Triumph, have you had any cancer develop? 100% no
5. If you have developed cancer since taking Triumph, what kind? n/a
6. How many nutritional supplements do you take on an average day? 0-40
7. Do you take any of the following do you take?
  - a. Vitamin C or Mito-C? yes 64%
  - b. AREdsII. yes 13%
  - c. 2,000IU or more of Vitamin D yes 80%
  - d. SAME. yes 7%
  - e. Niacin, vitamin B6 yes 38%
  - f. Fish oil or fish at least 3x per week yes 73%
  - g. A multivitamin 58%
  - h. Calcium 31%
8. Which of the following is closest to your diet?
  - a. Vegetarian or vegan. 18%
  - b. Mediterranean diet. 57%
  - c. Western diet = meat most days 25%
9. How many days a week do you get at least 30 minutes of exercise? AVG = 4. Range 0-7
10. About how many times have you looked at the Nutrition Investigator website?
  - a. Never 38%. b. A few times. 35%
  - c. About once a month. 8%. d. Frequently. 19%
11. How would you describe your health compared to others your age?
  - a. Average 20%. b. Below average 6%
  - c. Better. 44%. d. Much better 31%
12. How long have you been receiving the Nutrition Newsletter?
  - a. Less than 3 months. 17%. b. Less than a year. 12%
  - c. 1 to 10 years. 63% d. More than a decade 8%