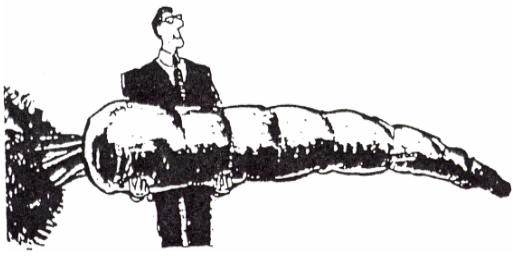

Carotenoid News

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FROM THE EDITOR

"The world is a book and those who do not travel, read only one page." (St. Augustine)

Saint Augustine (354-450), Doctor of the Church, traveled a lot in his youth around the Mediterranean, from Africa to Rome, despite hardships and dangers of long journeys by land and by sea. How much easier is for us to follow his example and read many pages of world's book! This year the carotenoid researchers have an opportunity to travel to many wonderful places (see UPCOMING EVENTS), foremost among them San Diego, for Experimental Biology 2008, and Okinawa, for the International Symposium on Carotenoids. This newsletter lists the highlights of EB'08 – do not miss CARIG Annual Conference on April 5, and CARIG/VARIG Social, with poster competition for young researchers. It is still not too late to register for ISC 2008 and visit fascinating Okinawa, the southernmost island of Japan, with its unique culture, traditions and perfect climate. The International Carotenoid Society prepared a great scientific program, and the hosts, Japanese Society for Carotenoid Research, have special plans for all guests, scientists and companions alike, assuring their comfort and entertainment.

The membership of the International Carotenoid Society and of its affiliate CARIG was always free and remains so, but **the Society needs your help.** Please read the eloquent request for voluntary donations by John Landrum, ICS treasurer and CARIG Chairman, who explains the need and shows the way.

Maria S. Sapuntzakis, Chicago, IL

CARIG Travel Awards

CARIG will award one or more $500 travel grants based on a poster competition to be held in conjunction with the CARIG/VARIG social at Experimental Biology 2008. The annual VARIG/CARIG social (Vitamin A Research Interactive Group/ Carotenoid Research Interactive Group) will be held Saturday, April 5, from 6:30 to 8:30 pm in the Marriot Marina G (cash bar).

Graduate students and postdoctoral trainees are eligible. Posters must address carotenoid and/or vitamin A research. For those assigned an oral presentation rather than a poster at EB'08, printed copies of the slides may be used for the CARIG/VARIG poster competition. No advance registration is required to participate in the poster competition. Contact: John T. Landrum, Professor of Chemistry and Associate Dean of the University Graduate School, Florida International University, Miami, FL 33199, **tel**: 305-348-2455, **E-mail**: landrumj@fiu.edu

UPCOMING EVENTS

April 5 - 9, 2008
Experimental Biology 2008, **San Diego, CA**. Contact: EB2008, FASEB Office of Scientific Meetings & Conferences, 9650 Rockville Pike, Bethesda MD 20814-3998, **website**: www.eb2008.org, **tel:** 301-634-7010, **e-mail**: eb@faseb.org [see below]
May 19 – 23, 2008
First International Congress on Nutrition and Cancer, Antalya, Turkey. Contact: Omer Kucuk, **e-mail**: kucuko@karmenos.org **tel**: 313-576-8767, **website**: www.nutritioncancer2008.org
June 9 - 11, 2008
11th International Society for Horticultural Science Symposium on the Processing Tomato, **Toronto, Ontario, Canada**. Contact: WPTC Congress and ISHS Symposium, 435 Consortium Court, London, ON, Canada N6E 2S8, **tel:** 519-681-1875, **e-mail**: 2008worldcongress@opvg.org, **fax**: 519-685-5719,
June 22-27, 2008
15th International Symposium on Carotenoids, Okinawa, Japan. Contact: Symposium Secretariat, **e-mail**: hassy@sci.osaka-cu.ac.jp, **web**: www.carotenoidsociety.org [see below]
September 9-11, 2008
VITAMINS 2008 - Nutrition and Diagnostics, Zlin, Czech Republic. Contact: Conference Secretary, **e-mail**: matouskova@radanal.cz, **Website:** www.vitamins.cz/en/

HIGHLIGHTS OF EXPERIMENTAL BIOLOGY 2008

Saturday, April 5
CARIG Annual Conference, 1:00-4:30pm
CARIG/VARIG Social and Graduate Student & Postdoc Poster Competition, 6:30-8:30 PM, Marriott Marina G
Monday, April 7
Vitamin A, Carotenoids and Retinoids Minisymposium I, 3:00 PM Convention Center, Room 29A
Tuesday, April 8
Vitamin A, Carotenoids and Retinoids Minisymposium II, 10:30AM, Convention Center, Room 29A
Vitamin A and Carotenoids Poster Sessions, 12:45-2:45 pm, Convention Center, Exhibit Hall

CARIG Annual Conference Program
Saturday, April 5, 2008
San Diego, CA
Chair: Elizabeth J. Johnson

1:00-1:40 James Allen Olson Memorial Perspectives on Carotenoids Lecture. **The Hidden Beauty of Carotenoids: from Brilliant Colors to Human Health**. *Arun Barua, Iowa State University*
1:40-1:50 Discussion.
Carotenoids in Early Life
1:50-2:15 Carotenoid Content in Human Breast Milk. *Sherry Tanumihardjo, University of Wisconsin-Madison*
2:15-2:40 Macular Pigment in Retina of Neonate Monkey. *John Landrum, Florida International University*
2:40-3:05 Role of Lutein in the Developing Retina. *B. Randy Hammond, University of Georgia-Athens*
3:05-3:15 Discussion
3:15-3:30 Break
Carotenoids and Skin
3:30-3:55 Measurement of Carotenoids in Human Skin. *Susan Mayne, Yale University*
3:55-4:20 Carotenoids and Skin Health. *Helmut Sies, Heinrich-Heine-Universitat*
4:20-4:30 Discussion

International Symposium on Carotenoids, Okinawa

The deadline for sending abstracts is March 31. (www.carotenoid.jp/ISC2008/info.html)

There will be a free shuttle bus for ISC attendees between Naha Airport and Hotel Moon Beach on June 22. The program includes Okinawa Churaumi Aquarium, one of the best in the world. There are excursions to a glass blowing artisan on 6/23, marine activities with BBQ lunch on 6/24, and village garden tour on 6/26. Okinawa cultural attractions will be featured during the

welcome mixer and banquet. More information about Okinawa is available on http://Okinawa.com

RECENT / FORTHCOMING PUBLICATIONS

SIGHT AND LIFE Magazine 3/2007, PO Box 2116, 4002 Basel, Switzerland, **tel:** 41-61-688-7494, **fax**: 41-61-688-1910, **e-mail**: info@sightandlife.org **website:** www.sightandlife.org
See especially: Mayer JE. Golden Rice and biofortification.
Wongsiriroj N & Blaner W. Recent advances in vitamin A absorption and transport.

Antioxidant Vitamins and Health: Cardiovascular Disease, Cancer, Cataracts, and Aging. Claude Fernand Bourgeois. 310pp. HNB Publishing, New York, 2007.

Vegetables and Fruits: Nutritional and Therapeutic Values. Thomas SC Li. CRC Press, January 2008, 304pp.

Alphabetical Listing of Recent Publications

Prepared by Dr. Harold Furr, Institute of Nutrition, Mahidol University, Thailand, and Department of Nutritional Sciences, University of Wisconsin, Madison. More extensive list may be found at www.carotenoidsociety.org.

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TECHNICAL NOTE

Nanostructures tested as β-carotene carriers

β-Carotene, used in foods and beverages as colorant and health ingredient, can be stabilized by novel nano-scale carriers. Using nanostructured lipid carrier (NLC), β-carotene, naturally insoluble in water (hydrophobic), can be dispersed and stabilized in beverages, tapping into technology originally used by the cosmetics and pharmaceutical industries. The small particle size of around 400 nm offers the possibility to use NLC as a food colloid in several applications without creaming or sedimentation. Especially, the application as colorant and provitamin A source in beverages is a focus of interest. The aim is to improve the bioavailability of β-carotene in food systems. The nanostructured lipid carrier is prepared by melting the lipid blend at 80°C (solid and liquid lipid plus the active ingredient) and dispersing it into a hot emulsifier solution. All particles prepared were in the nano-scale (smaller than 1 µm), with an average particle size of 0.3 µm after 9 weeks of storage at 20°C, and 30 weeks of storage at 4-8°C. Moreover, tocopherol (vitamin E) increased protection of β-carotene against degradation, with poor stability reported when no tocopherol was used in dilution. Formulating β-carotene in colloidal lipid particles of fat-in-water dispersions is a promising method to incorporate carotene into water based systems.

www.nutraingredients-usa.com (2/31/2008)

NEWS AND VIEWS

Serum Carotenoid Levels Vary by Marital Status

This study examined differences in serum carotenoid levels by marital status. The design was a cross-sectional, nationally representative survey of 16,597 participants ages 18 years and older from the Third National Health and Nutrition Examination Survey (NHANES III). Never married, divorced, or widowed men had lower levels of individual carotenoids and/or total carotenoids than married men. Widowed women exhibited similar trends. Serum carotenoid levels varied by marital status, and widowed men and women were at the greatest risk of low carotenoid levels.

Stimpson JP & Lackan NA.
JADA 107 (2007) 1581-85

Long-term β-carotene may slow mental decline

Men taking β-carotene supplements for 15 years or more may experience a slower rate of age-related cognitive decline, according to a new study from Harvard. Almost 6,000 volunteers took part in the study, with 4052 receiving β-carotene supplements for 18 years. The long-term β-carotene supplementation was associated with a significantly higher mean global score, compared to placebo. This group also performed significantly better than placebo for verbal memory. On the other hand, men taking part in the study for less than 10 years displayed no differences in cognition regardless of whether they took β-carotene or placebo. The study (*Arch Int Med 167:2184-90, 2007*) is the first to look at long-term antioxidant supplementation in relation to a decline in cognitive function that occurs with naturally with age, and that precedes diseases such as Alzheimer's. Participants in the Physicians' Health Study trial (started in 1982) and new recruits from the Physicians' Health Study II (started in 1998) received 50 mg β-carotene supplements or placebo on alternate days. In this generally healthy population, the extent of protection conferred by long-term treatment appeared modest. Nonetheless, studies have established that very modest differences in cognition, especially verbal memory, predict substantial differences in eventual risk of

dementia; thus, the public health impact of long-term β-carotene use could be large. The build-up of plaque from β-amyloid deposits is associated with an increase in brain cell damage and death from oxidative stress. This is related to a loss of cognitive function and an increased risk of Alzheimer's disease.
In an accompanying editorial (p. 2167-68), Kristine Yaffe from the University of California, San Francisco, stated: "The authors suggest that long-term exposure to antioxidants may be needed to have an effect on the underlying pathologic processes linked to changes in cognition. This is certainly plausible, given that the neuropathologic changes underlying clinically significant cognitive impairment appear to take years, if not decades. Thus, neuroprotection may have the greatest benefit early on in the process. While strategies aimed at midlife (or possibly even earlier) may make sense, they will prove to be difficult to study, since they would involve conducting trials that last for 25 to 30 years." Furthermore, Yaffe noted that 5 other randomized trials of antioxidants and cognitive function have been published, but only one suggested a protective effect. None of these lasted for more than 10 years.

www.nutraingredients-usa.com (11/13/2007)

Lycopene Inhibits Disease Progression in Patients with Benign Prostate Hyperplasia (BPH)

A total of 40 elderly men with histologically proven BPH, but free of prostate cancer were randomized to receive either lycopene at a dose of 15 mg/day or placebo for 6 months. The effects of the intervention on carotenoid status, clinical diagnostic markers of prostate proliferation, and symptoms of the disease were assessed. The primary endpoint of the study was the inhibition or reduction of serum prostate-specific antigen (PSA) levels. The 6-month lycopene supplementation decreased PSA levels ($P<0.05$), whereas there was no change in the placebo group. The plasma lycopene concentration increased in the group taking lycopene ($P<0.0001$), but other plasma carotenoids were not affected. Whereas progression of prostate enlargement occurred in the placebo group as assessed by trans-rectal ultrasonography ($P<0.05$), and digital rectal examination ($P<0.01$), the prostate did not enlarge in the lycopene group. Symptoms of the disease, as assessed via the International Prostate Symptom Score questionnaire, were improved in both groups with a significantly greater effect in men taking lycopene supplements. In conclusion, lycopene inhibited progression of BPH.

Schwarz S, et al. J Nutr 1308:49-53, 2008

Letter from International Carotenoid Society Treasurer

Dear Carotenoid Society Member:
I am writing to you as a fellow member of the International Carotenoid Society which came into formal existence in 1996 during the International Carotenoid Symposium held in Leiden, The Netherlands. As you know, there has never been a regular membership fee and this will continue to be policy of the Society. However, the Society needs your help. The mission of the Society as stated on our web site (www.carotenoidsociety.org) is "To provide, support and encourage all areas of carotenoid science, pure and applied, academic and commercial, research and educational." Much of this is done via the well-attended International Carotenoid Symposia, including the one most recently held in Edinburgh, Scotland. Planning is well underway for the 15th Symposium to be held June 22–27, 2008, in Okinawa, Japan. Details may be found on our web site. Some specific objectives of the Society are: (1) to stimulate and promote contacts and cooperation between carotenoid researchers in different parts of the world and in different areas of the carotenoid field, (2) to promote education, communication, and exchange of ideas and expertise between researchers and the public, (3) To provide help and advice to new and younger researchers entering the carotenoid field and to those in developing countries.

Many of these require a free flow of information and are facilitated by our web presence, which at this point has been maintained largely on a voluntary basis by some of our members. Recently we presented several student researchers financial awards for the high quality of their poster presentations at the Gordon Conference on Carotenoids held in Ventura, California. Also, please check your e-mail inbox for newsletter of the very active Carotenoids Research Interactive Group (CARIG). CARIG has recently affiliated with the Society, and we are providing support for their efforts as well. Continuing these activities and keeping the Society healthy requires that we explore additional possible sources of income. Thus, this letter is a request for a voluntary donation in support of our Society. We hope that you agree that the objectives of the Society are worthwhile and deserving of at least a modest financial annual contribution. We are asking that you select one of the donation levels indicated below:

* $30 USD (Sustaining Member)
* $60 USD (Augmenting Member)
* $100 USD (Visionary Member)
* $1000 USD (Corporate Member)

Donations may be made by credit card at our secure, on-line site,http://www.carotenoidsociety.org/donations2.html, by wire (see information below), or by check. Checks may be sent to: International Carotenoid Society
ATTN: Dr. John T. Landrum, Treasurer
Department of Chemistry and Biochemistry
Florida International University, 11200 SW 8th St
Miami, Florida 33199 USA

Information for sending a donation by wire:
Bank: Douglas County Bank, Downtown Bank
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Lawrence, Kansas 66044-0429
Tel: 1-888-865-7676
ABA Routing Number: 101114646
International Carotenoid Society Account Nr: 1011-051624
Wire Telephone Number: (785) 865-1000

Because we are a 501(c)(3) organization, contributions to the Society by US members may be tax deductible. Any contribution will be gratefully acknowledged with a letter providing the IRS identification number of the Society for tax purposes.
Regardless of whether you make a donation, the Council wants to thank you for your continued interest in the Society and its various activities. The Council also wishes to affirm that membership in the International Carotenoid Society is free and we do not assess membership dues.

Internet Addresses for Carotenoid Researchers

1. USDA Nutrient Database for Standard Reference (SR17) is a major source of food composition data for epidemiologists and nutritionists. Carotenoid Food Database contains best available estimates of carotenoid content in foods: www.nal.usda.gov/fnic/foodcomp/Data/car98/car98.html
2. Agricultural Research Service (ARS) prepared searchable database to view 60-nutrient profile (including carotenoids) for more than 13,000 foods: www.ars.usda.gov/foodsearch
3. International Carotenoid Society (ICS) **Webpage**: www.carotenoidsociety.org
4. LIPID BANK for Web. Carotenoid Section of LipidDatabase developed by Research Institute, International Medical Center of Japan, http://lipidbank.jp. Also available on ICS webpage: www.carotenoidsociety.org through Articles button.

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