



## International Society for Nutraceuticals and Functional Foods

ISNFF Newsletter  
December 2014

Volume 7, Issue 2

### Message from the ISNFF

We are only days away from the holiday season and it is timely to wish you and yours all the best for 2015 with complete success, health, and happiness. 2014 was yet another successful year for the **International Society for Nutraceuticals and Functional Foods**. The Annual Meeting, held in Istanbul, Turkey, from October 14 to 17 was outstanding with over 600 participants from around the globe. The joint short course with IFT, was held in New Orleans, from June 20 to 21 on “Nutraceuticals and Functional Foods in Enhanced Sports Performance, Exercise and Muscle Building”, thanks mainly to the efforts of Dr. Debasis Bagchi.



The Annual General Meeting of the ISNFF resulted in the installment of new executives with Dr. Chin-Kun Wang as the Chair, Dr. Debasis Bagchi as the Past Chair, Dr. Cesarettin Alasalvar as the Chair Elect, Dr. Ronald Pegg as the Secretary, and Dr. Rotimi Aluko as the Treasurer. The other executive Board members include Dr. Chi-Tang Ho and Dr. Fereidoon Shahidi. I would like to thank Dr. Debasis Bagchi as the outgoing chair for his excellent leadership over the past couple of years.

The *Journal of Functional Foods*, the official journal of the ISNFF, also had a leap jump in 2013 for its impact factors (IF), which was released in July 2014; it is now placed fifth on the top of over 100 journals in the field with an IF value of 4.48! We are grateful to all those who contributed to this success, especially Associate Editors Dr. Debasis Bagchi and Dr. Mingfu Wang, and all members of the JFF Editorial Board. I should also take the opportunity to thank Dr. Bagchi for his role as an Associate Editor over the past six years, and as he is stepping down from this role, we count on his continued help and guidance with the journal in different ways.

For 2015, the Annual Conference and Exhibition of the ISNFF will be held in Wuxi, China, from September 20 to 23 in the World Hotel Grand Juna (NOTE: Wuxi is located close to Pudong International Airport of Shanghai). Professor Bo Jiang is the local conference chair and we look forward to seeing you all at our exciting Annual Meeting.

Fereidoon Shahidi, ISNFF

The 2014 Annual Conference and Exhibition of the International Society for Nutraceuticals and Functional Foods (ISNFF) was held at the Military Museum and Culture Site in Istanbul, Turkey, October 14 to 17, 2014. This event was co-organized as one of the activities of the European Union-Seventh Framework Programme (FP7) - NutraHEALTH Project, coordinated by the Food Institute of Tübitak Marmara Research Center.

This conference included participation of delegates from 49<sup>+</sup> countries with 567 presentations (9 plenaries, 163 orals, and 394 posters). These were scheduled into 3 plenary, 27 oral and 5 poster sessions. The presentations were from world renowned experts in the field, bringing to the audience state-of-the-art information and the latest developments in the field of functional foods and nutraceuticals. This year's event also included a special Memorial symposium for Dr. Marian Naczka on "*Phenolics, Polyphenolics, and their Interaction*" to recognize his contributions to the field of food science and technology. In total, well over 600 registrants attended the Annual Meeting and Exhibition of the ISNFF.



The 2014 Annual Conference and Exhibition began with a cultural show from Giresun region of Turkey and welcoming remarks from Dr. Cesarettin Alasalvar (Conference Co-Organizer and Local Chair), Dr. Fereidoon Shahidi (Conference Co-Organizer and Principle Founder of ISNFF), and Dr. Bahadır Tunaboylu (President of Tübitak Marmara Research Center). In the evening of October 15 prior to the opening mixer, the famous and oldest Ottoman Military Band performed a magnificent show "Mehtaran" with 57 players. The Annual General Meeting of the ISNFF and Editorial Board Meeting of the *Journal of Functional Foods* were held on October 16<sup>th</sup> over the lunch break. The Gala Dinner and Award Presentations took place during a 4-hour cruise on the Bosphorus in the evening of October 16<sup>th</sup>, with breath-taking views of European and Asian sides, famous places, historical monuments, bridges as well as delicious food, live Turkish music, award and gift presentations, and cultural dances, among others. The meeting ended on the evening of October 17<sup>th</sup> with a closing ceremony, book draw, and poster award presentations.

The ISNFF Award Recipients for 2014 were as follows:

- The Merit Award was bestowed to Dr. Cesarettin Alasalvar (Tübitak Marmara Research Center, Turkey) for his outstanding contributions to the nutraceuticals and functional foods and service to the ISNFF.
- The Industry/Institution Merit Award was presented to Dr. Karen Lapsley (Almond Board of California, USA) for ABC's support of functional food initiatives and involvement in industry affairs.
- The recipient of the Fereidoon SHAHIDI Fellowship Award was Ji-Hyeok Lee (Jeju National University, South Korea), who had 16 peer-reviewed journal publications. The winners of the best poster presentation awards were Hsuan Chou-Taiwan (First Place), Maki Kashimoto-Japan (Second Place), and Ebru Pelvan-Turkey (Third Place).

The conference benefited from the generous sponsorship of several companies and institutions/societies, both financial and otherwise. The donors included Amway, Nutrilite Health Institute, Clinical Trial Center for Functional Foods of South Korea, AB Sciex, Spectroteck, Ant Teknik, Japan Natural Laboratories Co. Ltd., Almond Board of California, POS Bio-Sciences, Dardenel, Bunge (USA) and Kurukahveci Mehmet Efendi. The ISNFF is extremely grateful to these companies/associations for their generous contributions. In addition, among the exhibitors were the ISNFF, Tübitak Marmara Research Center, FP7-NutaHEALTH, Clinical Trial Center for Functional Foods of South Korea, Anamed & Analytic Group, Intox, Aksu Vital, Balparmak, Çaykur, Hazelnut Promotion Group, The Sabri Ülker Food Research Foundation, European Food Information Council (EUFIC), Aroma, Elsevier Publishing Company, and others.

On behalf of the ISNFF, we greatly appreciate your contributions and those of the sponsors, exhibitors, and participants at the conference. We look forward to seeing you at the next ISNFF meeting in Wuxi, China.

Dr. Cesarettin Alasalvar (Conference Co-Organizer and Local Chair)

Dr. Fereidoon Shahidi (Conference Co-Organizer and Principle Founder)



## **Bitter Melon: A Functional Food for Diabetes, but Can it also Cure and Prevent Cancer?**

**Shrikant Anant, Ph.D., KU Medical Center, The University of Kansas, Kansas City, KS, USA**

Is there anything in common between diabetes and cancer? So asked my father one day in early 2000 when I told him that I am now working on understanding how diet can play a significant role in preventing cancers, especially of the gastrointestinal tract (or commonly called GI tract), and that I was working on turmeric. When I heard this question, I was curious on what my father was thinking. Of course, one can see a connection by way of metabolic processes being affected, but then again, I thought where does turmeric fit into this story? Well, he quickly quashed my thoughts and said that I should think about bitter melon (*Momordica charantia*), a fruit used in Ayurveda to prevent and treat diabetes and associated complications.



Being from India, of course he was beaming with pride of the knowledge in Ayurveda for what we all know as to be a food that said in the best of ways would be “YUCK”! Well, what was I going to do, brush off what my father was saying as another old wives tale or be the dutiful son and listen to him and look into the merits of the vegetable. Well, of course I did the latter, and therein began my first foray to studying “functional foods”. So, first I learned about functional foods, and then about bitter melon. The more I read about it, the more it peaked my interest. First is that it is used for various ailments of the GI tract including ulcers, colitis, constipation and for treating parasitic infection such as pinworms. Now, how about cancer? Our initial studies were not very promising. Not having a whole lot of funds to be able to start a program, we decided to perform pilot studies and determined whether aqueous extracts of bitter melon obtained from the local Chinese store would kill colon cancer cells in culture, Although the extracts were somewhat effective in killing cells, it seemed to be a hit or miss based on the batch of production and the person who did it. So it was discouraging and we were losing interest; until one day we started seeing reports from Ratna Ray (Saint Louis University) and Pratibha Nerurkar (University of Hawaii) showing efficacy in prostate and breast cancers. So, we went back to the drawing board and started looking at what we did wrong. We made various kinds of extracts and the vegetable from various sources. To our surprise, we realized we realized that the Indian variety of the vegetable was far superior to the other varieties. There was significant inhibition of colon cancer growth in vitro and in vivo in tumor xenografts. More recently, our studies have focused on cancer stem cells. Dr. Courtney Houchen and I demonstrated that cells expressing the protein Doublecortin calmodulin-like 1 (DCLK1) have stem cells characteristics in colon and pancreatic cancers. In our current unpublished studies, we have identified a novel compound in bitter melon that targets the enzymatic activity in DCLK1 to inhibit colon cancer growth. Further studies are of course required to determine whether stem cells are a common mechanism by which functional foods prevent cancer growth and development. Nevertheless, it sure is the case for bitter melon and colon cancers, and we are actively also testing whether it is true with other cancers.

*Shrikant (Shri) Anant, Ph.D. is currently the Tom and Teresa Walsh Professor of Cancer Prevention and Kansas Mason Professor of Cancer Research, and the Associate Director for Prevention and Cancer Control at the National Cancer Institute-designated University of Kansas Cancer Center, the University of Kansas Medical Center. In addition to his interests in understanding how functional foods work, his research interests include RNA metabolism during tumorigenesis and targeting cancer stem cells. In addition to identifying a novel tumor suppressor and a protooncogene, his group has isolated compounds for prevention of colorectal and pancreatic cancers. Dr. Anant has published over 100 manuscripts, and multiple book chapters and reviews. He has received many awards, and is a fellow of the Indian Association of Biomedical Scientists, the American Gastroenterology Association, and the American College of Nutrition. His work has been reported by multiple media organizations worldwide including the BBC and the Associated Press. He regularly serves in various national panels, including the NIH Office of Dietary Supplements and the National Center for Complementary and Alternative Medicine panel on botanical research.*

## Identification of Chemical Markers Related to Concealed Damage in Almonds

Alyson E. Mitchell, Ph.D., Department of Food Science & Technology, University of California Davis, CA, USA

Characterizing the chemistry of almonds is key to product authentication, improving quality and addressing issues such as rancidity development and concealed damage. Concealed damage (CD) is defined as a browning discoloration of the kernel interior after moderate to high heat treatment (e.g. drying, roasting, etc.). In extreme cases, CD can present a bitter flavor (unknown compound) that results in immediate consumer rejection. Although moisture and heat appear to be involved in the development of CD, very little is known regarding how these conditions lead to the development of CD. Moreover, there is little understanding of the chemical changes in raw almonds and roasted almonds with CD. To date, CD cannot be detected in raw almonds by screening methods because there are no visible signs on the exterior or interior of the kernel before roasting. CD is not unique to almonds and has been reported in other nuts including hazelnuts, pecans and macadamia nuts exposed to warm and humid conditions. During harvest, conditions promoting CD in almonds are more likely to be encountered, if rain occurs when harvested almonds are on the orchard floor or in windrows where they may be exposed to repeated rain events and temperatures between 20 °C and 35 °C for several days. CD may also occur during stockpiling when almonds may accumulate moisture, which in turn may create heat through respiration processes. Under these conditions, early stages of the Maillard reaction may occur in raw almonds resulting in the formation of Amadori products. Later during heat treatments, these Amadori compounds may act as precursors for the brown pigment associated with CD.



Volatile organic compounds are responsible for the aroma and flavor of raw and roasted almonds. Recently we developed a headspace solid-phase microextraction gas chromatography/mass spectrometry (HS-SPME-GC/MS) assay to identify the profile of almond volatiles. This method eliminates solvent extraction and limits artifact generation. HS-SPME-GC/MS was used to analyze volatile compounds related to CD.

Our first objective was to classify the almonds into two groups: No concealed damage (NoCD), and those with concealed damage (CD). To achieve this, raw almond kernels were cut in a half, numbered and placed into two identical number racks. One rack of almond kernels was then roasted at 120 °C for 90 min; while, the other half was not roasted. Raw ½ almond kernels with CD were identified by comparisons with kernels that formed color upon roasting (see Figure 1 below). The surface color of each roasted half kernel was then measured with a colorimeter (LabScan XE, HunterLab) and color values  $L^*$ ,  $a^*$ , and  $b^*$  were monitored. We found that CD correlated with a CIE color value of  $L^* \geq 70$ .

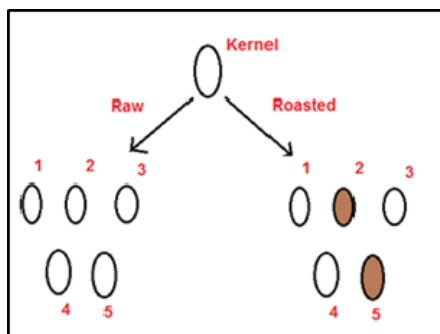


Figure 1. Identification of raw kernels with CD

Raw almonds were exposed to a moisture content of < 6%, 8%, and 10-12% and stored at either 35 °C or 45 °C for up to 18 days. Almonds exposed to < 6% moisture and either 35 °C or 45 °C did not form brown discoloration over the 18 days. An approximate 20% increase was observed in almonds exposed to 8% moisture at 35 °C. These levels remained consistent at ~20% over the 18 days. In almonds exposed to 8% moisture and 45 °C there was an increase in CD development around day 10, reaching 50% at the end of the 18 days. In comparison, almonds exposed to 10-12% moisture and either 35 °C or 45 °C displayed a significant increase in CD (>66%) by the first day of the study.



**Figure 2.** Example of almonds roasted at 120 °C for 90 min. (a) 6% moisture content; (b) 10-12% moisture content.

Comparisons of the volatile profiles of almond kernels exposed to < 6%, 8%, and 10-12% moisture and stored at either 35 °C or 45 °C for up to 18 days, suggest that almonds exposed to warm temperatures and moisture undergo metabolic activity which increases by-products related to fatty acid metabolism (e.g. lactones), lipid oxidation (e.g. hexanal, nonanal) and enzymatic activation (benzyl alcohol, phenylethyl alcohol, benzaldehyde). Hexanal and nonanal are decomposition products of oxidized linoleic acid and oleic acid; which account for almost 90% of the fatty acid composition of almonds. These compounds correlate with rancidity development in almonds and indicate that raw almonds with CD may be more susceptible to rancidity development; shortening the shelf life of these products.





International Society  
for Nutraceuticals & Functional Foods

## MEMBERSHIP APPLICATION 2015

<b>Last Name:</b> _____ <b>First Name:</b> _____	
Membership #: ISNFF-	
Company / Institution / University:	
Address:	
Telephone: (     ) _____	Fax: (     ) _____
E-Mail Address:	

New Membership		<input type="checkbox"/>
Renewal		<input type="checkbox"/>
Cancel Membership		<input type="checkbox"/>
Member	\$95	<input type="checkbox"/>
Student Member	\$45	<input type="checkbox"/>
Corporate Member	\$2,000	<input type="checkbox"/>
Corporate Member (Renewal)	\$500	<input type="checkbox"/>
<b>Payment Method:</b>		
Money Order:		<input type="checkbox"/>
Credit Card:	VISA <input type="checkbox"/> MASTERCARD <input type="checkbox"/>	
Credit Card #:	_____	
Card Holder:	_____	
Expiry Date:	_____	
Please complete form and return to:		
ISNFF, P.O. Box 29095, 12 Gleneyre Street, St. John's, NL, A1A 5B5 Canada		
Or scan and forward to Email: <a href="mailto:ISNFFsecretary@gmail.com">ISNFFsecretary@gmail.com</a>		

## UPCOMING NUTRACEUTICALS AND FUNCTIONAL FOODS EVENTS

### January 2015

12-13. 4<sup>th</sup> China International Nutraceutical and Functional Food Summit 2015 and Technical Expertise Exhibition; Beijing, China



26-27. ICNFF 2015: XIII International Conference on Nutraceuticals and Functional Foods; Jeddah, Saudi Arabia

### February 2015

8-9. 2015 International Conference on Food and Environmental Sciences (ICFES); Rangoon, Burma

### March 2015

4-8. Natural Products Expo West; Anaheim, CA, USA



9-10. ICPFF 2015: International Conference on Probiotics and Functional Foods; Miami, FL, USA

18-20. Nutra India Summit 2015; Mumbai, India

24-26. Vitafoods South America; São Paulo, Brazil



### April 2015

7-9. Ingredient Marketplace; Orlando, FL, USA

15-17. NUCE International (Nutraceutical, Cosmeceutical and Functional Foods & Drinks Trade Exhibition & Conference); Bologna, Italy

### May 2015

5-7. Vitafoods Europe; Palexop, Geneva, Switzerland



### June 2015

1-3. 6<sup>th</sup> International Dietary Fibre Conference 2015. From Fibre Functionality to Health; Paris, France

3-5. 9<sup>th</sup> World Congress on Polyphenols Applications; Malta

14-18. 12<sup>th</sup> International Congress on Engineering and Food (ICEF12); Québec City, PQ, Canada

24-26. Healthplex & Nutraceutical China 2015; Shanghai, China



29-1. The UK Probiotics Conference 2015. Microbes and Microbiomes: the gut feeling; London, UK

### July 2015

5-8. 1<sup>st</sup> North Dakota State University (NDSU) Conference on Food for Health; Fargo, ND, USA

11-14. IFT Annual Meeting; Chicago, IL, USA



12-15. 14<sup>th</sup> International Conference on Bioactive Lipids in Cancer, Inflammation and Related Diseases; Budapest, Hungary

20-21. ICNNS 2015: XIII International Conference on Nutritional and Nutraceutical Sciences; Paris, France



### September 2015

20-23. ISNFF's 8<sup>th</sup> International Conference & Exhibition on Nutraceuticals and Functional Foods; Wuxi, China (right next to Shanghai)



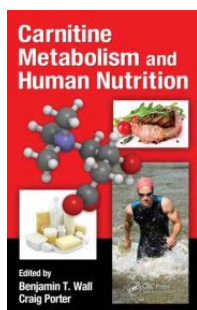


## NEW TITLES FOR 2014

Wiley is publishing a **Functional Foods Science & Technology Series** of books, which are edited by Professor Fereidoon Shahidi. The series is still new and developing and we are keen to add new volumes to it. If you have an idea for a new book that would be appropriate for the series then please get in touch with us. Perhaps you would like to act as author or editor of a book but, even if not, we welcome your suggestions for topics.

You can read more about the series here: [www.wiley.com/go/functionalfoods](http://www.wiley.com/go/functionalfoods)

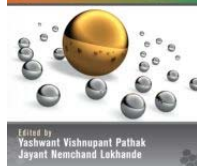
If you would like to participate, please contact David McDade: [david.mcdade@wiley.com](mailto:david.mcdade@wiley.com)



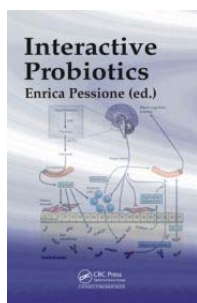
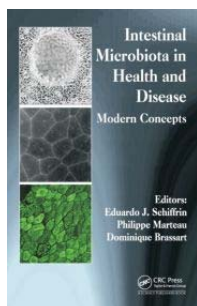
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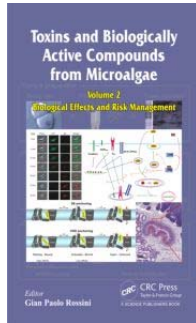
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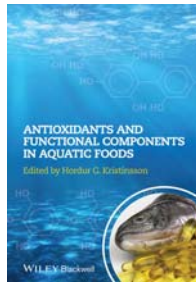
**Intestinal Microbiota in Health and Disease. Modern Concepts** Editors: Eduardo J. Schiffrin, Philippe Marteau & Dominique Brassart, CRC Press, 2014, pp 344.



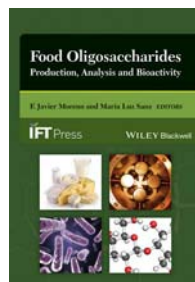
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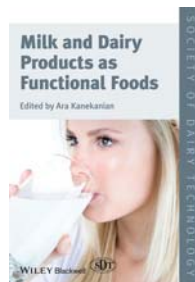
**Toxins and Biologically Active Compounds from Microalgae, Volume 2: Biological Effects and Risk Management**, Editor: Gian Paolo Rossini, CRC Press, 2014, pp 700.



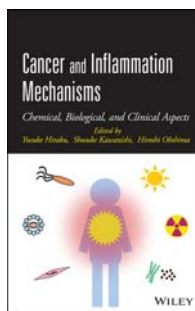
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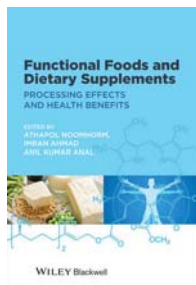
**Food Oligosaccharides. Production, Analysis and Bioactivity**, Editors: F. Javier Moreno & María Luz Sanz, Wiley-Blackwell, 2014, pp 552.



**Milk and Dairy Products as Functional Foods**, Editor: Ara Kanekanian, Wiley-Blackwell, 2014, pp 404.



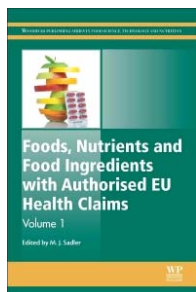
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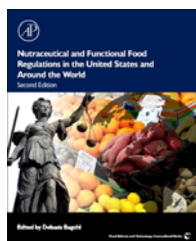
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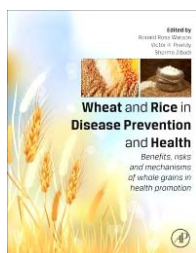
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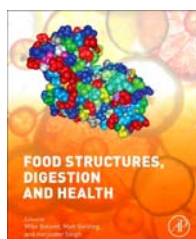
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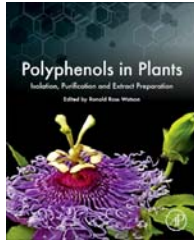
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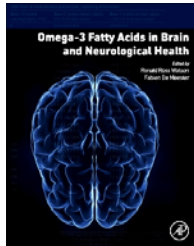
**Wheat and Rice in Disease Prevention and Health, 1<sup>st</sup> Edition. Benefits, Risks and Mechanisms of Whole Grains in Health Promotion**, Editors: Ronald Watson, Victor Preedy & Sherma Zibadi, Academic Press, 2014, pp 576.



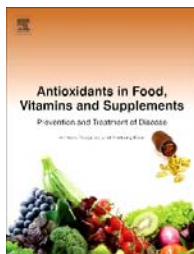
**Food Structures, Digestion and Health**, Editors: Mike Boland, Matt Bolding & Harjinder Singh, Academic Press, 2014, pp 544.



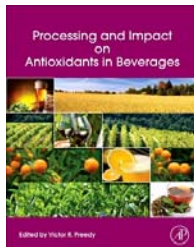
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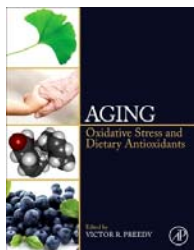
**Omega-3 Fatty Acids in Brain and Neurological Health**, Editors: Ronald Watson & Fabien De Meester, Academic Press, 2014, pp 496.



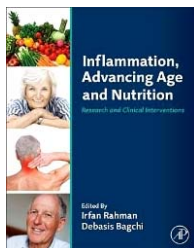
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**Aging. Oxidative Stress and Dietary Antioxidants**, Editor: Victor R. Preedy, Academic Press, 2014, pp 316.



**Inflammation, Advancing Age and Nutrition, 1<sup>st</sup> Edition. Research and Clinical Interventions**, Editors: Irfan Rahman & Debasis Bagchi, Academic Press, 2013, pp 394.