

**BIOGRAPHICAL SKETCH**

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NAME: Yang, Jian

eRA COMMONS USER NAME (agency login): jyangjian

POSITION TITLE: Professor of Food Sciences

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
Jiangnan University, Wuxi, P.R. China	B. Eng	07/1985	Food Technology
Washington State University, Pullman, WA	MS	05/1997	Food Science
Washington State University, Pullman, WA	PHD	12/2001	Food Science

**A. Personal Statement**

One of the aims in this project is to investigate the effect of non-alkaloids on tumor pathogenesis. The study requires extracting and separating bioactive components from two main Guam variants of Areca nut by preparative HPLC system. With my professional training in Food Science and other research experiences in natural products such as noni (*Morinda citrifolia*) fruit and purple-fleshed sweet potatoes, I have the expertise necessary to successfully carry out the proposed investigation.

My laboratory is equipped with instrumentation to extract phytochemicals and bioactive components from natural products. We extracted antioxidants, ascorbic acid, and phytochemicals (such as scopletin, quercetin, and rutin) from noni fruits and analyzed them via HPLC to study how processing and storage conditions affected the bioactive compounds. We also extracted anthocyanins from purple-fleshed sweet potatoes and studied the effect of steaming and dehydration on anthocyanin contents. While I was a post-graduate student, I extracted and analyzed free amino acids and glucose, fructose, and sucrose from potatoes via HPLC to study the effect of potato sprout inhibitors on these nutrients.

I have had experience on several other research projects funded by United States Department of Agriculture (USDA) in the role of both PI and co-PI. I have also collaborated with scientists from the University Hawaii to investigate bioactive components in select tropical plants. As a result of these experiences, I am aware of the importance of communication, planning, and implementing among project members to achieve the aims of the proposed project. Having recently returned from a sabbatical, I am ready to resume my research agenda and am pleased to join the U54 cancer research partnership between the University of Guam and the University of Hawaii Cancer Center.

1. Yang J, Powers JR, Boylston TD, Weller K. Sugars and free amino acids in stored potatoes treated with natural sprout inhibitors. *Journal of Food Science*. 1999;64:592-596.
2. Yang J, Gadi RL. Effect of steaming and dehydration on anthocyanins, antioxidant activity, total phenols and color characteristics of purple-fleshed sweet potatoes (*Ipomoea batatas*). *American Journal of Food Technology*. 2008;3:224-234.
3. Yang J, Gadi R, Paulino R, Thomson T. Total phenolics, ascorbic acid, and antioxidant capacity of noni (*Morinda citrifolia* L.) juice and powder as affected by illumination during storage. *Food Chemistry*. 2010;122:627-632.

**B. Positions And Honors****Positions and Employment**

1985 - 1994 Faculty Member, Zhejiang College of Light Industry, Hangzhou  
 1990 - 1991 Visiting Scientist, Carl Duisberg Gesellschaft  
 1994 - 2001 Graduate Research Assistant, Washington State University, Pullman, WA

- 2002 - 2007 Assistant Professor, College of Natural & Applied Sciences, University of Guam, Mangilao, GU
- 2007 - 2013 Associate Professor, Western Pacific Tropical Research Center, College of Natural & Applied Sciences, University of Guam, Mangilao, GU
- 2013 - Professor, College of Natural & Applied Sciences, University of Guam, Mangilao, GU

### **Other Experience and Professional Memberships**

- 1994 - 2001 Graduate Research Assistantship, Washington State University
- 1995 - 2002 Member, Institute of Food Technologists
- 1997 - Member, Chinese American Food Society
- 1999 - 2000 Member, Phi Tau Sigma Honorary Society for Food Science
- 2002 - Member, Guam Food Safety Task Force Committee
- 2002 - Professional Member, Institute of Food Technologists
- 2003 - 2003 Judge, the IFT Manfred Kroger Dairy Division Research Paper Competition
- 2003 - 2006 Ad Hoc Reviewer, USDA CSREES Small Business Innovation Research Grant Program, USDA CSREES National Integrated Food Safety Initiative Grant Program
- 2006 - Member, North American Jiangnan, University Association
- 2011 - Member, Advancing Science Service Society
- 2011 - Guest Editor, Journal of Analytical Methods in Chemistry
- 2012 - Panel, Annual Meeting Division Programs, Institute of Food Technologists
- 2013 - Member, Editorial Board for Annals of Food Processing and Preservation
- 2013 - Certified Food Scientist, International Food Science Certification Commission

### **Honors**

- 1990 Government Scholarship, Academic and Industry Leadership Program in Food Science and Nutrition, Carl Duisberg Gesellschaft, Germany
- 1999 Awards of Excellence in Scientific Research and Excellence in Presentation of Scientific Research, FTSA/Phi Tau Sigma/Procter & Gamble Graduate Student Research Paper Competition in IFT Annual Meeting

### **C. Contribution to Science**

1. Noni (*Morinda citrifolia* L.), a medicinal plant, is traditionally used to treat various diseases in the Pacific. Noni juice, powder, and extract are botanical dietary supplements consumed for degenerative disease prevention as well as complementary and alternative therapy for cancer patients. However, it is not clear how processing and storage affect the bioavailability of bioactive components and the shelf life of noni products. As a project director for a USDA-funded study, we found that antioxidant activity, total phenolics, and ascorbic acid degraded significantly during processing and storage at various conditions. The findings provided guidelines for noni product processors and consumers how to process and store noni products with maximizing bioactive components for consumer's health benefits.
  - a. Yang J, Paulino R, Janke-Stedronsky S, Abawi S. Free-radical-scavenging activity and total phenols of noni (*Morinda citrifolia* L.) juice and powder in processing and storage. *Food Chemistry*. 2007;102:302-308.
  - b. Yang J, Gadi R, Paulino R, Thomson T. Total phenolics, ascorbic acid, and antioxidant capacity of noni (*Morinda citrifolia* L.) juice and powder as affected by illumination during storage. *Food Chemistry*. 2010;122:627-632.
  - c. Yang J, Gadi R. Antioxidant capacity, total phenols, and ascorbic acid content of noni fruits and leaves at various stages of maturity. *Micronesica*. 2011; 42:167-176.
2. Kelaguen is an ethnic Chamorro food prepared by mixing meat with lemon juice or powder, minced onions, hot pepper, grated coconut, and salt. Unfortunately, consumption of kelaguen is one of the leading causes of foodborne illness on Guam. As a project director, the USDA-funded integrated research, extension, education project verified that pathogens not only survive during kelaguen preparation by lemon juice or powder but also grow during serving at tropical temperatures on Guam. Based on research findings, new recipes and proper food handling practices were developed to educate residents, hotel and restaurant food workers, and food safety educators to prepare and serve kelaguen safely.

- a. Yang J, Lee D. Lemon, pH and citric acid for kelaguen without temperature control for safety. *Micronesica*. 2009;41(1):21-33.
  - b. Yang J, Lee D, Afaisen S, Gadi R. Inactivation by lemon juice of *Escherichia coli* O157:H7, *Salmonella* Enteritidis, and *Listeria monocytogenes* in beef marinating for the ethnic food kelaguen. *Int J Food Microbiol*. 2013 Jan 1;160(3):353-9. PubMed PMID: [23290245](#).
3. The molten globule is an intermediate state of protein with a loosely packed hydrophobic core compared to the native state. The unique structure of the molten globule may provide new functional properties, such as carrying desirable flavor or transmitting undesirable off-flavors, to improve the quality of food products. I proposed and developed a research project to use high pressure technology to induce beta-lactoglobulin, a major protein in whey, into a molten globule state and investigated its ligand and flavor binding properties. The publications addressed high pressure at 600 MPa (50 °C, pH 7.0) induced beta-lactoglobulin into a stable molten globule state. The molten globule of beta-lactoglobulin increased affinity for hydrophobic ligand 1-anilino-naphthalene-8-sulfonate (ANS) but decreased affinity for cis-parinaric acid (CPA) and retinol. The induced molten beta-lactoglobulin also exhibited an increase or decrease in the binding affinity with flavor compounds depending on the structure of individual flavor compound. The finding opened a new research area that the induced intermediate state of food proteins may provide unique functional properties to improve the quality of formulated food products.
- a. Yang J, Dunker AK, Powers JR, Clark S, Swanson BG. Beta-lactoglobulin molten globule induced by high pressure. *J Agric Food Chem*. 2001;Jul;49(7):3236-43. PubMed PMID: [11453757](#).
  - b. Yang J, Powers JR, Clark S, Dunker AK, Swanson BG. Hydrophobic probe binding of beta-lactoglobulin in the native and molten globule state induced by high pressure as affected by pH, KIO(3) and N-ethylmaleimide. *J Agric Food Chem*. 2002;Aug 28;50(18):5207-14. PubMed PMID: [12188631](#).
  - c. Yang J, Powers JR, Clark K, Dunker K, Swanson BG. Ligand and flavor binding functional properties of beta-lactoglobulin in molten state induced by high pressure. *Journal of Food Science*. 2003;68:444-452.

#### **Complete List of Published Work in MyBibliography:**

<http://www.ncbi.nlm.nih.gov/myncbi/jian.yang.4/bibliographahy/47561515/public/?sort=date&direction=ascending>

#### **D. Research Support**

##### **Ongoing Research Support**

NIH/NCI U54-CA-143727

(Underwood - PI)

01/01/2015 – 8/31/2015

##### **University of Guam/Cancer Research Center of Hawaii Partnership (2 of 2)**

Project Title: *Functional assessment of molecular components of Areca nut involved in pro-inflammatory mechanisms of immune cells.*

The goal of this project is to identify the active chemical components of Areca that mediate calcium signals in immunocytes and determine the molecular mechanisms by which calcium is mobilized in these cells.

Role: Co-Investigator

USDA NIFA Multi-State Hatch W3122

10/01/2014 – 09/30/2015

Project Title: *Beneficial and adverse effects of natural, bioactive dietary chemicals on human and food safety*

The goal of this project is to identify potential or adverse effects of selected classes of bioactive compounds on human health

Role: Co-PI

##### **Completed Research Support**

T-STAR 2010-34135-21309

(Yang - PI)

10/01/2010 – 09/31/2013

USDA NIFA

Project Title: *Identifying marker compounds and indicators in noni (*Morinda citrifolia*) products for enhancing shelf-life and quality control.*

The goal of this project is to identify potential indicators that can be used to determine shelf-life and control quality of noni products.

Role: PI

T-STAR Project  
USDA NIFA

(Yang - PI)

10/01/2010 – 09/31/2013

Project Title: *Adding value to tropical and subtropical botanicals: identification and valuation of bioactivity polyphenols in Ilex, Guava, Mamaki, and Noni Leaf Teas.*

The goal of this project is to identify and quantify antioxidant and bioactive components in selected tropical and sub-tropical botanicals reflecting potentials as beverages and value-added products.

Role: PI