

CURRICULUM VITAE
Murad A. Al-Holy, PhD

Present position (2004-present): *Assistant professor of Food Microbiology/Food Safety*

Department of Clinical Nutrition and Dietetics
Faculty of Allied Health Sciences
Hashemite University
Zarqa-Jordan, Postal code: 13115
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Specialty: Food Science/Food Microbiology

EDUCATION:

- 2001- 2003 Food Science and Human Nutrition, **Washington State University,**
Ph.D. in Food Science, Pullman, WA, USA
Minor: Human Nutrition
Dissertation Title: “Inactivation of *Listeria* spp in High Value Aquatic Food Products”
- 1997-1999 **M.Sc** in Nutrition and Food Technology, **University of Jordan,**
Amman-Jordan
Dissertation Title: “Citric Acid Production by Selected *Aspergillus* species Using Whey as a Fermentation Medium”
- 1993-1997 **B.Sc** in Nutrition and Food Technology, **University of Jordan,**
Amman-Jordan

MICROBIOLOGICAL SKILLS

1. Isolation, purification, identification and culturing of microorganisms.
2. Working with food-related pathogenic and non-pathogenic microorganism.
3. Identification of microorganisms using novel techniques such as FT-IR technology
4. Determination of the kinetics of microbial growth and inactivation
5. PCR, DNA sequencing techniques

PROFESSIONAL EXPERIENCES

2004-Present	Assistant professor of Food Microbiology and Safety, Hashemite University
2002-2003	Food Science and Human Nutrition, Washington State University Teaching Assistant Food Chemistry (FSHN 461), Nutrition and Living (FSHN 130)
2001 – 2003	Food Science and Human Nutrition, Washington State University Research Assistant
2000-2001	Lab. Supervisor: Ghadeer Water Bottling Company-Jordan Chemical and microbiological analysis of water
1997-1999	Nutrition and Food Technology, University of Jordan Teaching Assistant Food Analysis and Food Microbiology classes

RESEARCH INTERESTS

- Determining the thermal inactivation kinetics of pathogenic foodborne microorganism in different food systems
- Developing pasteurization protocols for high value seafood products using conventional thermal processes
- Developing pasteurization protocols for high value seafood products using novel heating technologies (radio frequency and microwave dielectric heating)
- Using combinations of antimicrobial treatment with mild heat treatment to process heat-sensitive food products
- Designing and implementing experiments to quantify and identify pathogenic and spoilage microorganisms in food systems using Short Wavelength and Fourier Transform Infrared Spectroscopy
- Studying the growth, survival, recovery and inactivation of *Enterobacter sakazakii* (*Cronobacter* spp) in infant formula and baby foods
- Developing new media for recovery of intact and injured foodborne pathogens
- Providing expert consulting services for food safety and extension of shelf life of different food products, especially chilled meat products

TEACHING

1. Department of Food Science and Human Nutrition, Washington State University (2001-2003)

- Taught part of the Nutrition and living class at Washington State University
- Helped in teaching some lab periods in a course of “Thermal Processing of Foods” at Washington State University
- Taught part of a class of “Advanced Food Technology” at Washington State University
- Supervised a lab of “Food Chemistry” at Washington State University

2. Department of Clinical Nutrition and Dietetics, Faculty of Allied Health Sciences-Hashemite University (February, 2004-Present time)

Instructional activities at the Hashemite University:

- Food Chemistry
- Nutrition and Health
- Food Microbiology
- Food Hygiene
- Fundamentals of Nutrition

REFEREE IN A PEER REVIEWED JOURNALS

- Served as a reviewer in the peer reviewed Journal “**Journal of Food Processing and Preservation**”.
- Served as a reviewer in the peer reviewed Journal “**Journal of Food Science**”.
- Served as a reviewer in the peer reviewed Journal “**Journal of Food Engineering**”.
- Served as a reviewer in the peer reviewed Journal “**Journal of Food Protection**”.
- Served as a reviewer in the peer reviewed Journal “**Journal of Agricultural and Food Chemistry**”.
- Served as a reviewer in the peer reviewed Journal “**Yonsei Medical Journal**”.
- Served as a reviewer in the peer reviewed Journal “**Journal of Food Safety**”.
- Served as a reviewer in the peer reviewed Journal “**International Journal of Food Science and Technology**”.
- Served as a reviewer in the peer reviewed Journal “**Sensing and Instrumentation for Food Quality and Safety**”.
- Served as a reviewer in the peer reviewed Journal “**Jordan Journal of Agricultural Sciences (JJAS)**”.

AWARDS

- 2002 Travel Award – the Institute of Food Technologists, USA.
- 2002 CAHE Scholarship – Washington State University, USA.
- 2003 Outstanding student award in the State of Washington, The Puget Sound-IFT, WA, USA.
- 2007-2008 **Fulbright Postdoctoral scholarship**

CONFERENCES

1- 2002- Pacific Fisheries Technologists Annual Meeting, Reno-Nevada.

Presentation: “Thermal inactivation of *Listeria innocua* in salmon (*Oncorhynchus keta*) caviar using conventional glass and novel aluminum TDT tubes”

2- 2002- Institute of Food Technologists Annual Meeting, Anaheim-CA

Presentation: “Dielectric properties of salmon (*Oncorhynchus keta*) and sturgeon (*Acipenser transmontanus*) caviar at radio frequency (RF) and microwave (MW) pasteurization frequencies”

3- 2004 Institute of Food Technologists Annual Meeting, July 12-16, Las Vegas, NV.

Presentation: "Bruise detection in Pacific salmon by short-wavelength near-infrared spectroscopy".

4- 2005 Institute of Food Technologists Annual Meeting, July 16-20, New Orleans,

Presentation: "Detection of *Alicyclobacillus* isolates in apple juice by Fourier transform infrared spectroscopy".

5- 2005- Institute of Food Technologists Annual Meeting, New Orleans, LA

Presentation: “Discrimination of Foodborne Pathogens by Fourier Transform Infrared Spectroscopy and Principal Component Analysis.

6- 2006 EFFOST Annual Meeting/Total Food 2006. Hague, Netherland.

Al-Holy, M*., Al-Qadiri, H., Lin, M., and Rasco, B. Inhibition of *Listeria innocua* in hummus (chickpea dip) by a combination of nisin and citric acid.

7- 2006 EFFOST Annual Meeting/Total Food 2006. Hague, Netherland.

Al-Holy, M*., Lin, M., Chang, S., Cavinato, A., and Rasco, B. Discrimination of *Alicyclobacillus isolates* in apple juice by Fourier transform infrared spectroscopy.

8- The 5TH International Congress on Food Technology. Thsaloniki, Greece, 2007.

Al-Holy, M*., Lin, M., AbuGoush, M., and Rasco, B. Thermal resistance, growth and inactivation of *Enterobacter sakazakii* in dry and reconstituted infant formula.

9- The 5TH International Congress on Food Technology. Thsaloniki, Greece, 2007.

Al-Holy, M*., Lin, M., and Rasco, B. A comparative study between overlay method and selective media for recovery of stressed cells of *Enterobacter sakazakii* from infant formula.

10- The First International conference on *Cronobacter* spp (*Enterobacter sakazakii*), Dublin, Ireland, 2009.

Al-Holy, M.A., Castro, L., and Rasco, B.A. Inactivation of *Cronobacter* spp (*Enterobacter sakazakii*) in infant formula using lactic acid, copper sulfate and monolaurin

GRADUATE STUDENT ADVISING

2008 Luis Castro, Master student in Food Science (Co-advisor)

2007 Ashraf Abu Al-Hassan, Master student in Food Science (Committee member)

2007 Khalid Kaddoura, Master student in Food Science (Committee member)

PROFESSIONAL AFFILIATION

International Association for Food Protection

PUBLICATIONS

- 1- M. Lin., A.G. Cavinato., D.D. Mayes., **Al-Holy, M.A.**, Y. Huang., S. Smiley, and B.A. Rasco. **2003**. Bruise detection in Pacific pink salmon (*Oncorhynchus gorbuscha*) by short-wavelength near-infrared spectroscopy. *Journal of Agricultural and Food Chemistry*: 51, 6404-6408.
- 2- **Al-Holy, M.A** and Al-Delaimy, K.S. **2003**. Citric acid production from whey with sugars and additives by *Aspergillus niger*. *African Journal of Biotechnology*: 2(10), 356-359.
- 3- **Al-Holy, M.A**, J. Ruitter., M. Lin., D-Y Kang, and B.A. Rasco. **2004**. Inactivation of *Listeria innocua* in nisin treated salmon (*Oncorhynchus keta*) and sturgeon (*Acipenser transmontanus*) caviar using radio frequency (RF) pasteurization. *Journal of Food Protection*: 67(9), 1848-1854.
- 4- **Al-Holy, M.A.**, Z. Quinde., D. Guan., J. Tang, and B. Rasco. **2004**. Thermal inactivation of *Listeria innocua* in salmon (*Oncorhynchus keta*) caviar using conventional glass and novel aluminum thermal-death-time tubes. *Journal of Food Protection*: 67(2), 383-386.
- 5- Lin, M., **Al-Holy, M.A.**, Mousavi-Hesary, M., Al-Qadiri, H., Cavinato, A.G, and Rasco. B.A. **2004**. Rapid and quantitative detection of the microbial spoilage in chicken meat by diffuse reflectance spectroscopy (600-11000 nm). *Letters in Applied Microbiology*: 39, 148-155.
- 6- M. Lin., **Al-Holy, M.A.**, Al-Qadiri, H., Kang, D.H., Cavinato, A.G., Haung, Y., and Rasco, B.A. **2004**. Discrimination of intact and injured *Listeria*

- monocytogenes* by Fourier transform infrared spectroscopy and principal component analysis. *Journal of Agricultural and Food Chemistry*: 52, 5769-5772.
- 7- Luechapattanaorn, K., Wang, Y., Wang, M., **Al-Holy, M.A.**, Kang, D. H. and Tang, J., **2004**. Microbial safety in Radio-frequency processing of packaged foods. *Journal of Food Science*: 69(7), M201-M206.
 - 8- **Al-Holy, M.A.**, Y. Wang., J. Tang, and B. Rasco. **2005**. Dielectric properties of salmon (*Oncorhynchus keta*) and sturgeon (*Acipenser transmontanus*) caviar at radio frequency (RF) and microwave (MW) pasteurization frequencies. *Journal of Food Engineering*: 70, 564-570.
 - 9- **Al-Holy, M.A.**, Lin, M., Rasco, B.A. **2005**. Destruction of *Listeria monocytogenes* in sturgeon (*Acipenser transmontanus*) caviar using a combination of nisin with chemical antimicrobials or moderate heat. *Journal of Food Protection*: 68, 512-520.
 - 10- Lin, M., **Al-Holy M.**, Chang, S-S., Haung, Y., Cavinato, A.G., Kang, D-H, and Rasco, B.A. **2005**. Rapid discrimination of *Alicyclobacillus* strains in Apple Juice by Fourier Transform Infrared Spectroscopy. *International Journal of Food Microbiology*. 105: 369-376.
 - 11- Tayyem, R., and **Al-Holy, M.** **2005**. Nutrition during childhood. Proceedings of the first conference on childhood and the family. Hahemite University. Zarqa-Jordan.
 - 12- **Al-Holy, M.**; Lin, M.; Cavinato, A.G.; Rasco, B.A. **2006**. The use of Fourier transform infrared spectroscopy to differentiate *Escherichia coli* O157:H7 from other bacteria inoculated into apple juice. *Food Microbiology*: 23 (2): 162-168.
 - 13- **Al-Holy, M.A.**, Lin, M., Al-Qadiri, H, Cavinato, A.G, and Rasco. B.A. **2006**. Classification of foodborne pathogens by Fourier transforms infrared spectroscopy and pattern recognition techniques. *Journal of Rapid Methods and Automation in Microbiology*: 14, 189-200.
 - 14- Lin, M., Mosouvai, M., **Al-Holy, M.A.**, Cavinato, A.G., Rasco, B.A. **2006**. Rapid near infrared spectroscopic method for the detection of spoilage in Rainbow trout (*Oncorhynchus mykiss*) fillet. *Journal of Food Science*: 71(1), S018-023.
 - 15- **Al-Holy, M.A.**, Al-Qadiri, H.M., Lin, M., Rasco. B.A. **2006**. Inhibition of *Listeria innocua* in hummus by a combination of nisin and citric acid. *Journal of Food Protection*: 69(6): 1322-1327.
 - 16- **Al-Holy, M.**, and Rasco, B. **2006**. Characterization of salmon (*Oncorhynchus keta*) and sturgeon (*Acipenser transmontanus*) caviar proteins. *Journal of Food Biochemistry*: 30, 422-428.
 - 17- Al-Qadiri, H., **Al-Holy, M.A.**, Lin, M., Alami, N.I., Rasco, B.A. **2006**. Rapid detection and identification of *Pseudomonas aeruginosa* and *Escherichia coli* as pure and mixed cultures in bottled drinking water using Fourier transform infrared spectroscopy and multivariate analysis. *Journal of Agricultural and Food Chemistry*: 54, 5749-5754.
 - 18- Lin, M., **Al-Holy M.A.**, Chang, S.-S., Kang, D.-H, and Rasco, B.A. **2007**. Phylogenetic and spectroscopic analysis of *Alicyclobacillus* isolates by 16S rDNA sequencing and mid infrared spectroscopy. *Sensing and Instrumentation in Food Quality*: 1, 11-17.

- 19- **Al-Holy, M***, Lin, M., AbuGoush, M., and Rasco, B. 2009. Thermal resistance, growth and inactivation of *Enterobacter sakazakii* in dry and reconstituted infant formula . *Journal of Food Safety*: (In press)
- 20- Abu-Ghoush, M., Samhour, M., **Al-Holy, M.**, and Herald, H. 2008. Formulation and fuzzy modeling of emulsion stability and viscosity of a gum-protein emulsifier in a model mayonnaise system. *Journal of Food Engineering*: 84: 348-357.
- 21- **Al-Holy, M.A.**, Lin, M., Al-Qadiri, Rasco. B.A. **2006**. Discrimination of Foodborne Pathogens by Fourier Transform Infrared Spectroscopy and Principal Component Analysis. *Journal of Rapid Methods and Automation in Microbiology*: 14, 189-200.
- 22- Lin, M., Mosouvai, M., **Al-Holy, M.A.**, Cavinato, A.G., Rasco, B.A. **2006**. Rapid near infrared spectroscopic method for the detection of spoilage in Rainbow trout (*Oncorhynchus mykiss*) fillet. *Journal of Food Science*: 71(1), S018-023.
- 23- Al-Qadiri, H.M., Lin, M., **Al-Holy, M.A.** Cavinato, A.G and Rasco, B.A. **2008**. Detection of sublethal thermal injury in *Salmonella enterica* Serotype Typhimurium and *Listeria monocytogenes* using Fourier Transform Infrared (FT-IR spectroscopy 4000-6000 cm⁻¹). *J. Food Science*. 73 (2): M54-M61.
- 24- Al-Qadiri, H.M., Lin, M., **Al-Holy, M.A.** Cavinato, A.G and Rasco, B.A. **2008**. Monitoring quality loss of pasteurized skim milk using visible and short wavelength near-infrared spectroscopy and multivariate analysis. *Journal of Dairy Science*. 91: 950-958.
- 25- Al-Qadiri, H.M., Al-Alami, N., Lin, M., **Al-Holy, M.A.** Cavinato, A.G and Rasco, B.A. **2008**. Studying of the bacterial growth phases using Fourier transform infrared spectroscopy and multivariate analysis. *Journal of Rapid Methods and Automation in Microbiology*. 16: 73-89.
- 26- Osaili, T.M., Shaker, R.R., Olimat, A.N., Al-Nabulsi, A.A., Al-Holy, M.A. and Forsythe, S.J. **2008**. Detergent and sanitizer stresses decrease the thermal resistance of *Enterobacter sakazakii* in infant milk formula. *Journal of Food Science*. 73 (3): M154-M157.
- 27- **Al-Holy, M***, Lin, M., Al-Qadiri, H.M. and Rasco, B. A. **2008**. A comparative study between overlay method and selective-differential media for recovery of stressed *Enterobacter sakazakii* cells from infant formula milk. *Food Microbiology*. 25: 22-28.
- 28- **Al-Holy, M.A.**, Shaker, R., Al-Nabulsi, A., Osaili, T.M. and Aayyash, M. **2008**. Inactivation of *Listeria innocua* in white cheese by a combination of nisin and heat. (Under preparation).
- 29- **Al-Holy, M.A***, and **Castro, L.** Inactivation of *Cronobacter* spp (*Enterobacter sakazakii*) in infant formula using lactic acid, copper sulfate and monolaurin (Submitted).
- 30- **Al-Holy, M.A ***, Shin J-H , Osaili, T., and Rasco, B.A. A novel enrichment broth to improve detection and isolation of *Cronobacter* spp (*Enterobacter sakazakii*) from infant formula (Under preparation)

BOOK CHAPTERS

- 1- **Al-Holy, M.A.**, Lin, M., and Rasco, B.A. **2007**. Inactivation of *Bacillus cereus* by high hydrostatic pressure. In *High Pressure Processing of Foods* (Christopher, J.D and Feeherry, E (Eds)). *First edition, Blackwell Publishing*. Iowa, USA.
- 2- **Al-Holy, M.A.**, and Rasco, B.A. **2007**. Proteins: Basic concepts, In *Food Chemistry: Principles and Application*, (Hui, Y.H (Ed) *Second edition, Science Technology System*. West Sacramento, California, USA.
- 3- Lin, M., Rasco, B. A. Cavinato, A.G. and **Al-Holy, M.**, **2009**. Infrared Spceroscopy-Near Infrared Spectroscopy and Mid Infrared Spectroscopy. In *Infrared Spectroscopy for Food Quality Analysis and Control* (Hutchins, C (Ed)). Elseveir, London, UK.

COMPUTER SKILLS

- Systems: Microsoft office, SAS. Delight, Adobe Phptoshop.

RESEARCH ACTIVITIES

- Actively cooperating with a research group at Washington State University in the field of food microbiology: In the last five years, I have conducted and supervised many mutual research projects between the Hashemite University and The Food Science Department at Washington State University.
- I have a strong cooperation with faculty members at the Jordan University of Science and Technology and the University of Jordan in the field of food safety and food microbiology.

Funded Projects:

- Discrimination of Food borne pathogens by Fourier Transform Infrared Spectroscopy – Hashemite university, 2004
- Detection of *Allicyclobacillus* in apple juice by Fourier Transform Infrared Spectroscopy- Fulbright Office-Jordan, 2007
- Shelf-life extension of chilled food products-Faculty for factory research and development program, 2008

Committees:

- 1- Member of the scientific research committee at the faculty of Allied Health Sciences-Hashemite University
- 2- Member of the of instrumentation committee at the faculty of Allied Health Sciences- Hashemite University
- 3- Head of the Food Safety committee at Hashemite University
- 4- Member of the University council-Hashemite University-2006/2007.

Community Service:

- Safe handling of food and hygienic practices of workers in the food preparation areas at the Hashemite University, 2005.
- A short course in food safety to employees in food control authorities in Jordan.
- Participated in the open “Health Day” held in the Liaison office of the Hashemite University in Zarqa.