

Curriculum Vitae

Tianou Zhang, M.D., Ph.D.

Assistant Professor

Department of Kinesiology, Health and Nutrition

College of Education and Human Development, The University of Texas at San Antonio (UTSA)

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EDUCATION

Doctor of Philosophy in Kinesiology (Exercise Physiology)

Ph.D. minor in Nutrition

University of Minnesota-Twin Cities

Minneapolis, MN

Sept. 2012-Jul. 2018

Master of Science in Sports Medicine (Sports Nutrition)

Peking University

Beijing, China

Sept. 2009-Jul. 2012

Bachelor of Medicine (M.D.) in Preventive Medicine (Clinical Nutrition)

Sun Yat-Sen University

Guangzhou, China

Sept. 2004-Jun. 2009

RESEARCH STATEMENT

Exercise and nutrition scientists are increasingly looking into plant chemical compounds for dietary supplements that demonstrate antioxidant and anti-inflammatory properties. These phytochemicals existed in plants (e.g. oat Avenanthramides and Oleocanthal/Oleacein in extra virgin olive oil, etc.) are attractive resources to exercise physiology and nutrition scientist, to balance oxidative stress and inflammation, and they are widely available and natural.

My research interests are in the following areas:

(1) Investigate the health benefits of nutrients/phytochemicals supplementation in acute or chronic inflammation and immuno-suppression in sports and exercise (e.g. eccentric contraction induced muscle injury, upper respiratory tract infection, overtraining syndrome, etc.) to improve skeletal muscle health and sports performance.

(2) Explore and screen the potential phytochemicals from natural plants and apply to chronic diseases caused by oxidative stress and inflammation, such as obesity, insulin resistance and cardiovascular diseases (e.g. atherosclerosis, hypertension, etc.).

(3) Seek collaborations to develop nanotechnology and microencapsulation techniques to enhance anti-inflammatory and immunoregulatory properties of phytochemicals and bioactive compounds extracted from plants, which could be potentially applied in nutraceutical and pharmaceutical fields.

WORK EXPERIENCE

Research

Department of Kinesiology, Health and Nutrition

The University of Texas at San Antonio

Assistant Professor

- Effects of Oat Avenanthramides (AVA) Supplement on Eccentric Exercise-Induced Hormonal and Metabolites Changes* Jun. 2018-present
--Sponsored by Ceapro Inc.
- Investigate the effects of long-term dietary oat AVA supplementation on hormonal and metabolites changes after downhill running (DR) among male and female subjects
- School of Kinesiology, University of Minnesota** **Research Assistant**
- Effects of Oat Avenanthramides (AVA) Supplement on Eccentric Exercise-Induced Immune System Changes* Jun. 2016-Jul. 2018
--Sponsored by Ceapro Inc.
- Examining whether long-term dietary supplementation (8 weeks) of oat flour cookies rich in AVA could regulate immune cells (neutrophils/monocytes) changes after downhill running (DR) among male and female subjects
- Biological Efficacy of Oleocanthal (OCT) and Exercise Training in Inhibiting Inflammation and Diet-Induced Atherosclerosis in Rats* Jan. 2016- Jul. 2018
--Sponsored by International Society for Oleocanthal
- Measuring the effects of 12 weeks of OCT supplementation and exercise training on endothelial functions (eNOS/iNOS/NO) and inflammatory pathways (COX2/PGE2) in atherosclerotic rats
- Antioxidant and Anti-inflammatory Effects of Oat Avenanthramides (AVA) Supplement after Eccentric Exercise* Sept. 2015-Jul. 2018
--Sponsored by Quaker Oats, PepsiCo.
- Examining whether oat AVA supplementation (8 weeks) could enhance blood antioxidant capacity and reduce blood inflammatory markers after downhill running (DR)
- Bioavailability and Metabolism of Oat Avenanthramides (AVA)* Sept. 2012-Jun. 2015
--Sponsored by Quaker Oats, PepsiCo
- Detecting oat Avenanthramides (AVA) absorption and elimination profile in human subjects after acute oat cookies consumption containing three different doses of AVA
- Role of PGC-1 α : Signaling in Disuse-induced Skeletal Muscle Atrophy* Sept. 2012-Sept. 2014
- Observing the effects of PGC-1 α injection on reactive oxygen species (ROS) and skeletal muscle functions in mice with skeletal muscle atrophy.
- Institute of Sports Medicine, Peking University** **Research Assistant**
- Effects of a single bout of exhaustive exercise on endoplasmic reticulum stress in liver and skeletal muscles in mice* Sept. 2009-Jul. 2012
- Observing the effects of a single bout of exhaustive exercise on endoplasmic reticulum stress (ERS) in liver and skeletal muscles in mice, to explore the mechanisms underlying sports injury from acute exercise.

The effect of thyroid hormones on visfatin expression in lipid anabolism and catabolism Sept. 2009-Jul. 2012

- Detecting the plasma visfatin concentrations in subjects with hyperthyroidism and hypothyroidism in vivo to reveal the possible regulation mechanism between visfatin and tri-iodothyronine (T₃) in vitro as a further interpretation.

The effect of exhaustive exercise on metal-binding proteins expressions in testes Sept. 2009-Jul. 2012

- Exploring the effects of exhaustive exercise on metal-binding proteins expressions in testes and plasma testosterone levels of rats.

School of Public Health, Sun Yat-Sen University

RA/ Student PI

A study on body composition and nutritional metabolic indices on evaluating nutrition status of diabetic nephropathy patients

Sept. 2008-Jun. 2009

- Applying anthropometry, bioelectric impedance analysis (BIA) and biochemistry methods to analyze the body composition and nutritional status of diabetic nephropathy patients to estimate the effect of these methods in evaluating the nutritional status of diabetic nephropathy patients.

A study on nutritional Knowledge-Attitude-Practice (K-A-P) and nutritional status among middle school students in Shenzhen
--Sponsored by Undergraduate Student Research Grant

Jun. 2008-Jun. 2009

- Investigated nutritional conditions (obesity, normal, and malnutrition) and nutritional K-A-P (knowledge, attitude and behavior) of middle school students in Shenzhen to explore new ways of promoting local nutrition education and healthier lifestyles among students.

Teaching

Department of Kinesiology, Health and Nutrition

San Antonio, TX

The University of Texas at San Antonio

Aug. 2018-Present

Assistant Professor

- KAH 5403 Applied Cardiovascular Physiology
- KIN 4233 Advanced Exercise Physiology
- KIN 4253 Exercise Nutrition

College of Health & Science, Concordia University

St. Paul, MN

Adjunct Instructor

Aug. 2017-May 2018

- BIO 315 Human Anatomy & Physiology I
- BIO 315 Human Anatomy & Physiology II

School of Kinesiology, University of Minnesota

Minneapolis, MN

Teaching Assistant

Sept. 2014-May 2018

- KIN 5141 Nutrition and Exercise for Health Promotion and Disease Prevention

Teaching Assistant

- KIN 5385 Exercise for Healthy Aging & Disease Prevention and Management

Sept. 2014- May 2018

Teaching Assistant

- KIN 3027 Human Anatomy for Kinesiology Students

Sept. 2012- May 2018

Instructor

- China Champions Program: American Society and Culture
- China Champions Program: Sports Medicine and Sports Nutrition Terminology

Sept. 2014-Dec. 2014

Sept. 2016- May 2017

Professional

Intern

University Enterprise Laboratories, University of Minnesota

- Participated in an Economic Development Fellows Internship Program for Kerry (a taste and nutrition company) to develop 2nd generation of immune health product, Wellmune 2.0

Minneapolis, MN

Jan. 2017-Jun. 2017

Intern

Guangdong General Hospital

- 16-week clinical nutrition practice in the Dept. of Nutrition

Guangzhou, China

Mar. 2009-Jul. 2009

Intern

Guangzhou No.12 People's Hospital

- 16-week clinical practice in the Dept. of Medicine and Surgery

Guangzhou, China

May. 2008-Sept.2008

University Service

KHN Department Committee

Department of Kinesiology, Health and Nutrition, UTSA

- Develop Ph.D. program proposal and involve community & collaboration task force

San Antonio, TX

Aug. 2018-Present

Faculty Member

Center for Community Based and Applied Health Research, UTSA

- Promote collaborative, interdisciplinary, applied health research that engages, empowers, and mobilizes communities.

San Antonio, TX

Aug. 2018-Present

Search Committee

School of Kinesiology, University of Minnesota

- Recruiting a tenure-track assistant professor in Exercise Physiology

Minneapolis, MN

Jan. 2017-May 2017

Recreation and Wellness Advisory Board

Recreation and Wellness Center, University of Minnesota

- Advising Recreation and Wellness leaders on programming, facility and policy operations.

Minneapolis, MN

Sept. 2014-May 2016

PUBLICATIONS**Book chapters**

- [1] **Zhang, T.** and Ji, L.L. Avenanthramides. Whole Grains and Their Bioactives: Composition and Health. John Wiley & Sons Ltd. 2019

Refereed Journal Articles

- [1] **Zhang, T.**, Liu, T., Xu, A., Ebrahim, J., Gagnon, G., Chu, Y.-F., Johnson J., Ji, L.L. (submitted) Anti-inflammatory and immune-regulation of Oat Avenanthramides (AVA) Supplementation in Humans after Downhill Running.
- [2] **Zhang, T.**, Liu, T., Kang, C.-H., Yeo, D., Amerigo, J., Magiatis, P., Ji, L.L. (submitted) Endothelial Dysfunction is Impeded by Oleocanthal (OCT) Supplementation in Extra Virgin Olive Oil and Exercise Training in Atherosclerotic Rats.
- [3] Yeo, D., Kang, C.-H., **Zhang, T.**, and Ji, L.L. Avenanthramides Attenuate Inflammation and Atrophy in Muscle Cells. *J. Sport Health Sci.* 00 (2018) 1-7
- [4] Kang, C.-H., Shin, W., Yeo, D., Lim, W., **Zhang, T.**, Ji, L.L. Anti-inflammatory Effect of Avenanthramides via NF- κ B Pathways In C2C12 Skeletal Muscle Cells. *Free Radic Biol Med.* 2018;117:30-36.
- [5] **Zhang, T.**, Shao, J., Gao, Y., Chen, C., Chu, Y.-F., Johnson, J., Kang, C.-H., Yeo, D., and Ji, L.L. Absorption and Elimination of Oat Avenanthramides (AVA) in Humans after Acute Consumption of Oat Cookies. *Oxid. Med. Cell. Longev.* 2017; 2017: 2056705.
- [6] Koenig, R.T., Dickman, J.R., Kang, C.-H., **Zhang, T.**, Chu, Y.-F., and Ji, L.L. (2016). Avenanthramide supplementation attenuates eccentric exercise-inflicted blood inflammatory markers in women. *Eur. J. Appl. Physiol.* 116, 67–76.
- [7] Koenig, R., Dickman, J.R., Kang, C., **Zhang, T.**, Chu, Y.-F., and Ji, L.L. (2014). Avenanthramide supplementation attenuates exercise-induced inflammation in postmenopausal women. *Nutr. J.* 13, 21.
- [8] Wen, Y., **Zhang, T.**, Xie, L., Ai, H., and Guan, Y. (2012). Effects of a Single Bout of Exhaustive Exercise on the Endoplasmic Reticulum Stress in Liver and Skeletal Muscle of Mice. *Chin. J. Sports Med.* 31, 140–145.
- [9] **Zhang, T.**, Wen, Y., Xie, L., Liang, W., and Ai, H. (2012). Separation and identification of testicular metal-binding proteins induced by exhaustive swimming in rats. *Acta Lab. Anim. Sci. Sin.* 20, 1–6.
- [10] Han, J., **Zhang, T.**, Xiao, W., Chang, C., and Ai, H. (2012). Up-regulation of visfatin expression in subjects with hyperthyroidism and hypothyroidism is partially relevant to a nonlinear regulation mechanism between visfatin and tri-iodothyronine with various concentrations. *Chin. Med. J. (Engl.)* 125, 874–881.
- [11] **Zhang, T.**, and Sun, A. (2008). The methylation study of Cu-Zn SOD gene CpG island in ApoE-deficient mice. *China Pract. Med.* 3, 65–66.

Abstracts

- [1] **Zhang, T.**, Liu, T., Zhang Y., Amerigo J., Shao J., Yeo D., Ji L.L. Effects of Olive Oil Phytochemicals and Exercise on Circulatory Leukocytes and Inflammation in Atherosclerotic Rats. *Medicine & Science in Sports & Exercise*. 50(5S):839, 2018
- [2] **Zhang, T.**, Liu, T., Kang, C.-H., Yeo, D., Amerigo, J., Magiatis, P., Ji, L.L. Oat Avenanthramides Protects Against Eccentric Exercise Induced Muscle Inflammation in Human after Downhill Running. *Dietary Bioactive Components, Current Developments in Nutrition*. 2018, 2 (11), <https://doi.org/10.1093/cdn/nzy035>
- [3] **Zhang, T.**, Shao, J., Gao, Y., Chen, C., Yao, D., Wise, M., Kang, C.-H., Yeo, D., and Ji, L.L. Oat Avenanthramides (AVA) Are Bioavailable in Humans after Acute Consumption of Oat Cookies. *FASEB Journal*. 2016, 30: no. 1 Supplement.
- [4] Yeo, D., Kang, C.-H., Song, C., **Zhang, T.**, Ji L.L. Roles of FOXO signaling and mitochondrial dynamics in muscle disuse atrophy. *FASEB Journal*. 2014, 28: no. 1 Supplement.

PRESENTATIONS, POSTERS AND EXHIBITS**Non-refereed Journal Articles and Posters**

- [1] **Zhang, T.**, Xu, H., Li, L., and Wang, C. (2008). A study on dietary behavior and health status among junior middle school students in Bao'an district of Shenzhen City. In *Teaching and Learning: Research and Practice*, (SUN Yat-Sen University Press), pp. 273–283.
- [2] **Zhang, T.**, Shao, J., Gao, Y., Chen, C., Chu, Y.-F., Johnson, J., Kang, C.-H., Yeo, D., and Ji, L.L. Absorption and Elimination of Oat Avenanthramides (AVA) in Humans after Acute Consumption of Oat Cookies. *New York Academy of Sciences and PepsiCo: Journey through Science Day*. 2015, New York.
- [3] Ji L.L., Kang C.H., Yeo, D., **Zhang, T.** Contraction-Mediated Redox Signaling: Effect of Muscle Immobilization and PGC-1 α Overexpression. 5th International Conference on Nutrition and Physical Activity (NAPA). 2014, Xi'an, China.
- [4] **Zhang, T.**, Kang, C.-H., Yeo, D., Ji, L.L.. Oat Antioxidants Protect Against Muscle Damage and Inflammation in Exercise. *CEHD Research Day*. 2014, Minneapolis.
- [5] **Zhang, T.**, Han, J., Ai, H. Isolation and Partial Characterization of Exhaustive Swimming-induced Testis Metal-Binding Proteins (TMBPs) in Rats. *10th Society of Chinese Scholars on Exercise Physiology and Fitness (SCSEPF) Annual Conference*. 2011: 56.

Invited Presentations at Professional Conferences

- [1] **Zhang, T.** and Ji, L.L. Oat Avenanthramides: Promising anti-inflammatory and antioxidant agents. 249th American Chemistry Society (ACS) Annual Meeting. 2014, Dallas, United States.
- [2] **Zhang, T.** Purification and Identification of Exhaustive Swimming-induced Testis Metal-Binding Proteins (TMBPs) in Rats. *The International Workshop on Protein Expression and Purification (PEP) Strategies*. 2011, Bangkok, Thailand.

Social media reports:

- [1] Tianou Zhang, Kinesiology Ph.D., studies olive oil's anti-inflammatory effect on heart health. Retrieved from: <https://umnkinesiology.wordpress.com/2017/09/01/tianou-zhang-kinesiology-ph-d-studies-olive-oils-anti-inflammatory-effect-on-heart-health/>
- [2] 2016 CEHD Three Minute Thesis Competition - Tianou Zhang. Online video at: <https://www.youtube.com/watch?v=yzTcJ3E6czM>
- [3] Oats – the new exercise recovery food: New study shows that oats may help combat inflammation. Published online at Discover: Health and Medicine, University of Minnesota. Retrieved from: <http://discover.umn.edu/news/health-medicine/oats-exercise-recovery-food>
- [4] Antioxidant-Rich Oats Could Be the Next Anti-Inflammatory Superfood. Published online at CEHD Vision 2020 Blog, University of Minnesota. Retrieved from: <http://cehdvision2020.umn.edu/cehd-blog/antioxidant-rich-oats/>
- [5] Study Finds Oats Helpful for Exercise-Induced Inflammation in Postmenopausal Women. Published online at Natural Health Research Institute. Retrieved from: <http://www.naturalhealthresearch.org/oats-exercise-inflammation/>

MEMBERSHIPS IN PROFESSIONAL ORGANIZATIONS

- American College of Sports Medicine (ACSM)
- American Society of Nutrition (ASN)

FUNDING SUPPORT**Ongoing**

- | | |
|---|---|
| • Start-up Grant, UTSA
Project: Purchase new equipment and necessary new supplies. Set up new lab (Laboratory of Exercise and Sport Nutrition) | 2018-present
Amount: \$147,000
Role: PI |
| • Industry Research Grant, Ceapro Inc. (Canada)
Project: Gender difference and hormonal response to oat avenanthramides supplementation in subjects after downhill running | 2017-present
Amount: \$20,000
Role: Co-PI |
| • Industry Research Grant, Ceapro Inc. (Canada)
Project: Immune system regulation after oat Avenanthramides supplementation in subjects after downhill running | 2016-2018
Amount: \$26,000
Role: Co-PI |

Completed

- | | |
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| • PepsiCo Nutrition Research Grant, PepsiCo
Projects: (1) Bioavailability and Metabolism of Oat Avenanthramides (AVA); (2) Antioxidant and Anti-inflammatory Effects of Oat Avenanthramides (AVA) Supplement after Eccentric Exercise | 2012-2016
Amount: \$200,000
Role: Team Lead
PI: Li Li Ji |
| • Doctoral Dissertation Fellowship (DDF), University of Minnesota
Project: Dietary Antioxidant Protection against Inflammation in Exercise and Obesity | 2016-2017
Amount: \$25,600
Role: PI |

- Student Research Grant, Sun Yat-Sen University
Project: A study on nutritional Knowledge-Attitude-Practice (K-A-P) and nutritional status among middle school students in Shenzhen
2008-2009
Amount: \$200
Role: PI

Applied but not supported

- ACSM Foundation Doctoral Student Research Grant, ACSM
Project: Effect of AVA Supplementation on Stress and Inflammatory Response to Exercise
2015-2016
Amount: \$5,000
Role: PI
- Healthy Foods, Healthy Lives (HFHL) Institute Graduate and Professional Student Research Grant Program, University of Minnesota
2016-2017
Amount: \$10,000
Role: PI
Project: Effects of oat Avenanthramides (AVA) supplementation on systemic inflammation and endothelial functions among obese African Americans

Travel grants

- New York Academy of Sciences (NYAS) and PepsiCo.: Journey through Science Day
Title: Effects of Oat Avenanthramides on Human Circulatory Leukocytes after Downhill Running
Sep. 2017
Amount: \$700
- Title: Stability of Oat Avenanthramides (AVA) under Various Baking Conditions in False Malted Oat Cookies
Nov. 2016
Amount: \$700
- Title: Bioavailability and Pharmacokinetic Property of Oat Avenanthramides (AVA) in Human after Acute Consumption of Natural Oat Cookies
Nov. 2015
Amount: \$700
- Doctoral Student Travel Award
School of Kinesiology, University of Minnesota
Jun. 2016
Amount: \$200
- The International Workshop on Protein Expression and Purification (PEP) Strategies from Chulalongkorn University, Thailand. (Winner of “Support Grant”)
Oct. 2011
Amount: \$300

HONORS AND AWARDS**Fellowships and scholarships**

- Graduate fellowship of Peking University, 2nd Prize & 3rd Prize
2009-2010
- National Scholarship for undergraduate student, 1st Prize
2008
- Scholarship for Outstanding Student
2005-2007

Conference awards

- 10th Society of Chinese Scholars on Exercise Physiology and Fitness (SCSEPF) Annual Conference. Kaohsiung, Taiwan. (Best abstract award).
Jul. 2011

Other awards

- 3-Minutes Thesis (3MT) competition, finalists, College of Education and Human Development, University of Minnesota
2016