

Wang Jing-Rong



Position: Assistant Professor
Assistant Director of Macau Institute for Applied Research in Medicine and Health

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Dr. Wang Jing-Rong obtained her PhD from Hong Kong Baptist University in 2007. Her Ph.D dissertation focused on phytochemical and pharmacological studies of the root of *Ilex pubescens*, stem from which two USA patents have been granted. During the PhD study, she went to University of Houston and worked on drug metabolism and transport as a visiting research scholar. After graduation she completed two years postdoctoral trainings at Hong Kong Baptist University and was appointed as Research Assistant Professor thereafter. In September 2011, she joined State Key Laboratory of Quality Research in Chinese Medicine (Macau University of Science and Technology) and Macau Institute for Applied Research in Medicine and Health as an Assistant Professor. In July 2013, she was appointed as the Assistant Director of Macau Institute for Applied Research in Medicine and Health.

Over the past years, Dr. Wang has devoted to the research of chemistry, analysis and quality control methodology as well as metabolism of traditional Chinese medicines represented by ginseng. With years of research experiences, Dr. Wang has published more than 30 research papers in scientific journals and edited chapters of two phytochemical monographs as associate editor and editorial board member. Recently her research interest is on the study of anticancer natural products and application of LC-MS in the lipidomic and glycomic studies. She especially focused on the

establishment of improved analysis platforms for analyzing sphingolipidome and N-glycans in various biological samples by using multiple mass spectrometries. The results have been published on *Analytical Chemistry*, *Scientific Reports* and *Molecular BioSystems* etc. Recently she is focusing on and application of these platforms in TCM research. Her researches were supported by Macao Science and Technology Development Fund and National Natural Science Foundation of China.

Teaching and Research Areas

Teaching Subjects: Pharmacokinetics of Chinese Materia Medica; Selected Topics of Chemistry of Chinese Materia Medica; Advances in Chinese Medicine Pharmaceutic; Chemistry of Traditional Chinese Medicines

Research Areas: Natural Products Chemistry, Metabolomics, Chemical Analysis of Chinese Herbs and Pharmacokinetics of Traditional Chinese Medicines

Academic Qualifications

2008. 11 Ph. D. Hong Kong Baptist University

1997. 6 M. Sc. China Pharmaceutical University

1994. 7 B. En. China Pharmaceutical University

Teaching Experience

2011.9 -Present Assistant Professor, Macau University of Science and Technology

2011.1 - 2011.8 Research Assistant Professor, School of Chinese Medicine, Hong Kong Baptist University

2008.1 - 2011.1-

Baptist University

1997.7 - 2004.4 Research Associate/Lecture, School of Chinese Medicine, China
Pharmaceutical University

Representative Publications

- 1) **Wang, J. R.**; Guan, W. D.; Yau, L. F.; Gao, W. N.; Zhan, Y. Q.; Liu, L.; Yang, Z. F.; Jiang, Z. H., Glycomic signatures on serum IgGs for Prediction of Postvaccination Response. *Sci Rep* 2014, in press
- 2) **Wang, J. R.**; Zhang, H.; Yau, L. F.; Mi, J. N.; Lee, S.; Lee, K. C.; Hu, P.; Liu, L.; Jiang, Z. H., Improved sphingolipidomic approach based on ultra-high performance liquid chromatography and multiple mass spectrometries with application to cellular neurotoxicity. *Anal Chem* **2014**, *86* (12), 5688-96.
- 3) **Wang, J. R.**; Yau, L. F.; Zhang, R.; Xia, Y.; Ma, J.; Ho, H. M.; Hu, P.; Hu, M.; Liu, L.; Jiang, Z. H., Transformation of ginsenosides from notoginseng by artificial gastric juice can increase cytotoxicity toward cancer cells. *J Agric Food Chem* **2014**, *62* (12), 2558-73.
- 4) **Wang, J. R.**; Yau, L. F.; Gao, W. N.; Liu, Y.; Yick, P. W.; Liu, L.; Jiang, Z. H., Quantitative comparison and metabolite profiling of saponins in different parts of the root of Panax notoginseng. *J Agric Food Chem* **2014**, *62* (36), 9024-34.
- 5) Xie, H.; **Wang, J. R.**; Yau, L. F.; Liu, Y.; Liu, L.; Han, Q. B.; Zhao, Z.; Jiang, Z. H., Quantitative analysis of the flavonoid glycosides and terpene trilactones in the extract of Ginkgo biloba and evaluation of their inhibitory activity towards fibril formation of beta-amyloid peptide. *Molecules* **2014**, *19* (4), 4466-78.
- 6) Xie, H.; **Wang, J. R.**; Yau, L. F.; Liu, Y.; Liu, L.; Han, Q. B.; Zhao, Z.; Jiang, Z. H., Catechins and procyanidins of Ginkgo biloba show potent activities towards the inhibition of beta-amyloid peptide aggregation and destabilization of preformed fibrils. *Molecules* **2014**, *19* (4), 5119-34.
- 7) Liang, X.; **Wang, J. R.**; Wong, K. W.; Hsiao, W. L.; Zhou, H.; Jiang, Z. H.; Kam, K. T.; Liu, L., Optimization of 2-dimensional gel electrophoresis for proteomic studies of solid tumor tissue samples. *Mol Med Rep* **2014**, *9* (2), 626-32.
- 8) Law, B. Y.; Chan, W. K.; Xu, S. W.; **Wang, J. R.**; Bai, L. P.; Liu, L.; Wong, V. K., Natural small-molecule enhancers of autophagy induce autophagic cell death in apoptosis-defective cells. *Sci Rep* **2014**, *4*, 5510.
- 9) Kam, K. T.; Liang, X.; **Wang, J. R.**; Wong, K. W.; Hsiao, W. L.; Zhou, H.; Jiang, Z. H.; Liu, L., Evaluation on the effect of different in-gel peptide isoelectric focusing parameters in global proteomic profiling. *Anal Biochem* **2013**, *443* (1), 27-33.

- 10) Kwok, H. H.; Guo, G. L.; Lau, J. K.; Cheng, Y. K.; **Wang, J.-R.**; Jiang, Z.-H.; Keung, M. H.; Mak, N. K.; Yue, P. Y.; Wong, R. N., Stereoisomers ginsenosides-20(S)-Rg₃ and -20(R)-Rg₃ differentially induce angiogenesis through peroxisome proliferator-activated receptor-gamma. *Biochem Pharmacol* **2012**, 83 (7) , 893 - 902.
- 11) Zhang, H.; Yang, H.; Zhang, M.; Wang, Y.; **Wang, J. R.**; Yau, L.; Jiang, Z.; Hu, P., Identification of flavonol and triterpene glycosides in Luo-Han-Guo extract using ultra-high performance liquid chromatography/quadrupole time-of-flight mass spectrometry. *J Food Compos Anal* **2012**, 25 (2), 142-148.
- 12) Zhang, H.[†]; **Wang, J. R.**[†]; Yau, L. F.; Ho, H. M.; Chan, C. L.; Hu, P.; Liu, L.; Jiang, Z. H., A cellular lipidomic study on the Abeta-induced neurotoxicity and neuroprotective effects of EGCG by using UPLC/MS-based glycerolipids profiling and multivariate analysis. *Mol Biosyst* **2012**, 8 (12), 3208-15. (†: contribute equally)
- 13) Yang, Z.; **Wang, J. R.**; Niu, T.; Gao, S.; Yin, T.; You, M.; Jiang, Z. H.; Hu, M., Inhibition of P-glycoprotein leads to improved oral bioavailability of compound K, an anticancer metabolite of red ginseng extract produced by gut microflora. *Drug Metab Dispos* **2012**, 40 (8), 1538-44.
- 14) **Wang, J. R.**; Zhou, H.; Yi, X. Q.; Jiang, Z. H.; Liu, L., Total ginsenosides of Radix Ginseng modulates tricarboxylic acid cycle protein expression to enhance cardiac energy metabolism in ischemic rat heart tissues. *Molecules* **2012**, 17 (11), 12746-57.
- 15) **Wang, J. R.**; Tanaka, T.; Zhang, H.; Kouno, I.; Jiang, Z. H., Formation and conformation of baicalin-berberine and wogonoside-berberine complexes. *Chem Pharm Bull (Tokyo)* **2012**, 60 (6), 706-11.
- 16) Saw, C. L.; Yang, A. Y.; Cheng, D. C.; Boyanapalli, S. S.; Su, Z. Y.; Khor, T. O.; Gao, S.; **Wang, J. R.**; Jiang, Z. H.; Kong, A. N., Pharmacodynamic of Ginsenosides: Antioxidant Activities, Activation of Nrf2, and Potential Synergistic Effects of Combinations. *Chemical Research in Toxicology*. *Chem Res Toxicol* **2012**, 25(8):1574-80.
- 17) Yang, Z.; Gao, S.; **Wang, J. R.** ; Yin, T.; Teng, Y.; Wu, B.; You, M.; Jiang, Z.; Hu, M., Enhancement of oral bioavailability of 20(S)-ginsenoside Rh2 through improved understanding of its absorption and efflux mechanisms. *Drug Metab Dispos* **2011**, 39 (10), 1866-72.
- 18) Dong, H.; Bai, L. P.; Wong, V. K.; Zhou, H.; **Wang, J. R.**; Liu, Y.; Jiang, Z. H.; Liu, L., The in vitro structure-related anti-cancer activity of ginsenosides and their derivatives. *Molecules* **2011**, 16 (12), 10619-30.
- 19) Yi, X. Q.; Li, T.; **Wang, J. R.**; Wong, V. K.; Luo, P.; Wong, I. Y.; Jiang, Z. H.; Liu, L.; Zhou, H., Total ginsenosides increase coronary perfusion flow in isolated rat hearts through activation of PI3K/Akt-eNOS signaling. *Phytomedicine* **2010**, 17 (13), 1006-15.

- 20) Wong, V. K.; Cheung, S. S.; Li, T.; Jiang, Z. H.; **Wang, J. R.**; Dong, H.; Yi, X. Q.; Zhou, H.; Liu, L., Asian ginseng extract inhibits in vitro and in vivo growth of mouse lewis lung carcinoma via modulation of ERK-p53 and NF-kappaB signaling. *J Cell Biochem* **2010**, *111* (4), 899-910.
- 21) **Wang, J. R.**; Leung, C. Y.; Ho, H. M.; Chai, S.; Yau, L. F.; Zhao, Z. Z.; Jiang, Z. H., Quantitative comparison of ginsenosides and polyacetylenes in wild and cultivated American ginseng. *Chem Biodivers* **2010**, *7* (4), 975-83.
- 22) Wang, S. W.; Kulkarni, K. H.; Tang, L.; **Wang, J. R.**; Yin, T.; Daidoji, T.; Yokota, H.; Hu, M., Disposition of flavonoids via enteric recycling: UDP-glucuronosyltransferase (UGT) 1As deficiency in Gunn rats is compensated by increases in UGT2Bs activities. *J Pharmacol Exp Ther* **2009**, *329* (3), 1023-31.
- 23) **Wang, J. R.**; Yamasaki, Y.; Tanaka, T.; Kouno, I.; Jiang, Z. H., Dammarane-type triterpene saponins from the flowers of *Panax notoginseng*. *Molecules* **2009**, *14* (6), 2087-94.
- 24) Zeng, Z. D.; Liang, Y. Z.; Jiang, Z. H.; Chau, F. T.; **Wang, J. R.**, Quantification of target components in complex mixtures using alternative moving window factor analysis and two-step iterative constraint method. *Talanta* **2008**, *74* (5), 1568-78.
- 25) **Wang, J. R.**; Zhou, H.; Jiang, Z. H.; Wong, Y. F.; Liu, L., In vivo anti-inflammatory and analgesic activities of a purified saponin fraction derived from the root of *Ilex pubescens*. *Biol Pharm Bull* **2008**, *31* (4), 643-50.
- 26) **Wang, J. R.**; Zhou, H.; Jiang, Z. H.; Liu, L., Two new triterpene saponins from the anti-inflammatory saponin fraction of *Ilex pubescens* root. *Chem Biodivers* **2008**, *5* (7), 1369-76.
- 27) Ma, H. Y.; Kou, J. P.; **Wang, J. R.**; Yu, B. Y., Evaluation of the anti-inflammatory and analgesic activities of Liu-Shen-Wan and its individual fractions. *J Ethnopharmacol* **2007**, *112* (1), 108-14.
- 28) Joseph, T. B.; Wang, S. W.; Liu, X.; Kulkarni, K. H.; **Wang, J. R.**; Xu, H.; Hu, M., Disposition of flavonoids via enteric recycling: enzyme stability affects characterization of prunetin glucuronidation across species, organs, and UGT isoforms. *Mol Pharm* **2007**, *4* (6), 883-94.
- 29) Du, J.; Tang, Y. Y.; **Wang, J. R.**; Jiang, Z., Improving feature extraction in fingerprint of medicinal herbs via wavelet transform and fractal technique. *J Chemom* **2007**, *20* (11-12), 476-483.
- 30) Jiang, Z. H.; Xie, Y.; Zhou, H.; **Wang, J. R.**; Liu, Z. Q.; Wong, Y. F.; Cai, X.; Xu, H. X.; Liu, L., Quantification of Aconitum alkaloids in aconite roots by a modified RP-HPLC method. *Phytochem Anal* **2005**, *16* (6), 415-21.
- 31) Jiang, Z. H.; **Wang, J. R.**; Li, M.; Liu, Z. Q.; Chau, K. Y.; Zhao, C.; Liu, L., Hemiterpene glucosides with anti-platelet aggregation activities from *Ilex pubescens*. *J Nat Prod* **2005**, *68* (3), 397-9.

Books

- 1) **J.-R. Wang** (Associate Editor). In L. He & Z.-H. Jiang (Editor) Resources Chemistry of Natural Products (). Science Press, Beijing, 2008.
- 2) **J.-R. Wang** (Editorial board member). In R. H. Zhou (Editor) Plant Chemotaxonomy (). Shanghai Science and Technology Press, 2005.

Memberships of Academic Associations and Community Service

- 1) Hong Kong Society of Mass Spectrometry
- 2) Inaugural Conference of the Specialty Committee on Immunology of Traditional Chinese Medicine of the World Federation of Chinese Medicine Societies (Executive member of the council)

Awards

- 1) Outstanding Achievement Award for the Research of Higher School-First Class Award of Natural Science (2014, Ministry of Education of the People's Republic of China)
- 2) Macao Science and Technology Awards - Second Class Award of Natural Science (2014)
- 3) Lishizhen Medicinal and Pharmaceutical Innovation Award (2012)
- 4) "The Best Thesis" and "The Excellent Poster" award in the First Macao Forum on Chinese Medicine in 2009, University of Macao