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教學科目: 中藥化學、中藥炮製學、中藥化學實驗技術、中藥研究進展、生物藥劑學

研究方向: 天然產物化學；中藥毒理學

現任澳門科技大學中藥質量研究國家重點實驗室副教授，世界中醫藥學會聯合會中醫藥免疫專業委員會常務理事、澳門風濕病研究國際合作聯盟理事會理事。

1999年畢業於中國藥科大學藥物化學專業，獲得理學博士學位。1999年至2001年在中國醫學科學院協和醫科大學（CAMS&PUMC）藥物研究所從事博士後研究工作。2001年獲得日本學術振興會（Japan Society for the Promotion of Science）博士後基金的資助，赴日本新潟大學從事博士後研究。2003年至2007年，在中國科學院(CAS)上海藥物研究所/國家新藥篩選中心擔任副研究員，碩士研究生導師。2007年至2011年，在香港中文大學生物醫學院從事中藥毒理方面的研究工作。2011年進入澳門科技大學以來，主要專注於基於色譜-質譜的蛋白組學分析方法在毒性研究方面的應用。多年來一直從事中藥相關的研究工作，主要包括採用各種光譜及色譜技術，尤其是質譜及核磁共振技術，對中藥的活性及毒性成分進行分離、結構鑒定、中藥毒性的作用機理及生物標記物的檢測等。在中藥研究方面具有豐富的經驗。到目前為止，在 Journal of Hepatology, PNAS, Analytical Chemistry, Journal of Medicinal Chemistry, Molecular Pharmaceutics, Journal of Mass Spectrometry, Analytica Chimica Acta, Journal of Natural Products 等 SCI 雜誌上共發表研究性論文 60 餘篇。申請國際發明專利 9 項，國家發明專利 2 項。

### 學歷

1999.7 中國藥科大學理學博士學位

1994.7 華西醫科大學理學學士學位

### 工作履歷

2018.7 – 今 澳門科技大學副教授  
2011.9 – 2018.6 澳門科技大學助理教授  
2007.11 – 2011.8 香港中文大學副研究員  
2003.12 – 2007.10 中國科學院上海藥物研究所/國家新藥篩選中心副教授  
2001.11 – 2003.11 日本新瀉大學博士後  
1999.9 – 2001.10 中國醫學科學院協和醫科大學藥物研究所博士後

### 學術成果

近年發表的主要 SCI 期刊論文：(\*Corresponding author)

- 1) Y Liang, GY Yan, JL Wu, XX Zong, ZQ Liu, H Zhou, L Liu\*, N Li\*. Qualitative and Quantitative Analysis of Lipo-alkaloids and Fatty acids in *Aconitum carmichaelii* using LC-MS and GC-MS. *Phytochem Anal* **2018**, *29*, 398-405.
- 2) MZ Zhu, GL Chen, JL Wu, N Li, ZH Liu, MQ Guo. Recent development in mass spectrometry and its hyphenated techniques for the analysis of medicinal plants. *Phytochem Anal* **2018**, *29*, 365-374.
- 3) GL Chen, JL Wu, N Li, MQ Guo. Screening for anti-proliferative and anti-inflammatory components from *Rhamnus davurica* Pall. using bio-affinity ultrafiltration with multiple drug targets. *Anal Bioanal Chem* **2018**, *410*, 3587-3595.
- 4) WY Gu, MX Liu, BQ Sun, MQ Guo, JL Wu\*, N Li\*. Profiling of polyunsaturated fatty acids in human serum using off-line and on-line solid phase extraction-nano-liquid chromatography-quadrupole-time-of-flight mass spectrometry. *J Chromatogr A* **2018**, *1537*, 141-146.
- 5) Y Zhuo, JL Wu, XJ Yan, MQ Guo, N Liu, H Zhou, L Liu\*, N Li\*. Strategy for Hepatotoxicity Prediction Induced by Drug Reactive Metabolites Using Human Liver Microsome and Online 2D-nano-LC-MS Analysis. *Anal Chem* **2017**, *89*, 13167-13175.
- 6) XQ Bian, BQ Sun, PY Zheng, N Li\*, JL Wu\*. Derivatization enhanced separation and sensitivity of long chain-free fatty acids: Application to asthma using targeted and non-targeted liquid chromatography-mass spectrometry approach. *Anal Chim Acta* **2017**, *989*, 59-70.

- 7) MZ Zhu, **N Li**, YT Wang, N Liu, MQ Guo, BQ Sun, H Zhou, L Liu, JL Wu. Acid/Salt/pH Gradient Improved Resolution and Sensitivity in Proteomics Study Using 2D SCX-RP LC-MS. *J Proteome Res* **2017**, *16*(9), 3470–3475.
- 8) M Yang, J Ruan, H Gao, **N Li**, J Ma, J Xue, Y Ye, PP Fu, J Wang, G Lin. First evidence of pyrrolizidine alkaloid N-oxide-induced hepatic sinusoidal obstruction syndrome in humans. *Arch Toxicol.* **2017**, *91*, 3913-3925.
- 9) **N Li**, F Zhang, W Lian, HL Wang, J Zheng, G Lin. Immunoassay approach for diagnosis of exposure to pyrrolizidine alkaloids. *J. Environ. Sci. Health C Environ. Carcinog. Ecotoxicol. Rev.* **2017**, *35*(3), 127-139.
- 10) XX Zong, GY Yan, JL Wu, EL Leung, H Zhou, **N Li\***, L Liu\*. New C<sub>19</sub>-Diterpenoid Alkaloids from the Parent Roots of *Aconitum carmichaelii*. *Tetrahedron Lett.* **2017**, *58*, 1622-1626.
- 11) MZ Zhu, **N Li\***, M Zhao, WL Yu, JL Wu\*. Metabolomic profiling delineate taste qualities of tea leaf pubescence. *Food Res. Int.* **2017**, *94* (4), 36-44.
- 12) Y Liang, JL Wu, X Li, MQ Guo, EL Leung, H Zhou, L Liu\*, **N Li\***. Anti-cancer and Anti-inflammatory New Vakognavine-type Alkaloid from the Roots of *Aconitum carmichaelii*. *Tetrahedron Lett.* **2016**, *57*(52), 5881-5884.
- 13) Y Liang, JL Wu, EL Leung, H Zhou, ZQ Liu, GY Yan, L Liu\*, **N Li\***. Identification of Oxygenated Fatty Acid as a Side Chain of Lipo-Alkaloids in *Aconitum carmichaelii* by UHPLC-Q-TOF-MS and a Database. *Molecules* **2016**, *21*(4), 437-454.
- 14) GL Chen, YQ Tian, JL Wu, **N Li**, MQ Zhu. Antiproliferative activities of Amaryllidaceae alkaloids from *Lycoris radiata* targeting DNA topoisomerase I. *Sci. Rep.* **2016**, *6*, 38284.
- 15) JJ Wu, N Lin, FY Li, GY Zhang, SG He, YF Zhu, RL Qu, **N Li**, SQ Liu, LZ Feng, L Liu, ZQ Liu, LL Lu. Induction of P-glycoprotein expression and activity by Aconitum alkaloids: implication for clinical drug-drug interactions. *Sci. Rep.* **2016**, *6*, 25343.
- 16) L Zhu, JQ Ruan, **N Li**, PP Fu, Y Ye, G Lin. A novel ultra-performance liquid chromatography hyphenated with quadrupole time of flight mass spectrometry method for rapid estimation of total toxic retronecine-type of pyrrolizidine alkaloids in herbs without requiring corresponding standards. *Food Chem.* **2016**, *194*, 1320-1328.
- 17) ZB Jiang, J Huang, C Xie, X Li, L Liu, J He, H Pan, L Huang, XX Fan, XJ Yao, Y Xie, **N Li**, L Liu, JX He, EL Leung. Combined use of PI3K and MEK inhibitors synergistically inhibits lung cancer with EGFR and KRAS mutations. *Oncol. Rep.* **2016**, *36*(1), 365-375.

- 18) J Ruan, H Gao, N Li, J Xue, J Chen, C Ke, Y Ye, PP Fu, J Zheng, J Wang, G Lin. Blood pyrrole-protein adducts - A biomarker of pyrrolizidine alkaloid-induced liver injury in humans. *J. Environ. Sci. Health C Environ. Carcinog. Ecotoxicol. Rev.* **2015**, *33*, 404-421.
- 19) YH Li, WCS Tai, JY Xue, WY Wong, C Lu, JQ Ruan, N Li, TF Wan, WY Chan, WLW Hsiao, and G Lin. Proteomic Study of Pyrrolizidine Alkaloid-Induced Hepatic Sinusoidal Obstruction Syndrome in Rats. *Chem. Res. Toxicol.* **2015**, *28*, 1715-1727.
- 20) H Gao, JQ Ruan, J Chen, N Li, CQ Ke, Y Ye, G Lin, JY Wang. Blood pyrrole-protein adducts as a diagnostic and prognostic index in pyrrolizidine alkaloid-hepatic sinusoidal obstruction syndrome. *Drug Design, Development and Therapy* **2015**, *9*, 4861-4868.
- 21) WY Gu, N Li\*, ELH Leung, H Zhou, XJ Yao, L Liu, JL Wu\*. Rapid identification of new minor chemical constituents from *Smilacis Glabrae Rhizoma* by combined use of UHPLC-Q-TOF-MS, preparative HPLC and UHPLC-SPE-NMR-MS techniques. *Phytochem. Anal.* **2015**, *26*, 428-435.
- 22) WY Gu, N Li\*, ELH Leung, H Zhou, GA Luo, L Liu, JL Wu\*. Metabolites software-assisted flavonoids hunting in plant using ultra-high performance liquid chromatography-quadrupole-time of flight mass spectrometry. *Molecules* **2015**, *20*, 3955-3971.
- 23) L Zhu, N Li, JQ Ruan, PP Fu, ZZ Zhao, G Lin. Chemical diversity investigation of hepatotoxic pyrrolizidine alkaloids in *Qianliguang (Senecio scandens)* and related species by UHPLC-QTOF-MS. *World J. Tradit. Chin. Med.* **2015**, *1*, 1-11.
- 24) XX Fan, N Li, et al. Celestrol induces apoptosis in gefitinib-resistant non-small cell lung cancer cells via caspases-dependent pathways and Hsp90 client protein degradation. *Molecules* **2014**, *19*, 3508-3522.
- 25) JL Wu, EL Leung, H Zhou, L Liu\*, N Li\*. Metabolite analysis of toosendanin by an ultra-high performance liquid chromatography-quadrupole-time of flight mass spectrometry technique. *Molecules* **2013**, *18*, 12144-12153.
- 26) YH Li, WL Kan, N Li, G Lin. Assessment of pyrrolizidine alkaloid-induced toxicity in an in vitro screening model. *J. Ethnopharmacol.* **2013**, *150*, 560-567.
- 27) J Ruan, N Li, et al. Characteristic ion clusters as determinants for the identification of pyrrolizidine alkaloid *N*-oxides in pyrrolizidine alkaloid-containing natural products using HPLC-MS analysis. *J. Mass Spectrom.* **2012**, *47*, 331-337.
- 28) Q Liu, N Li, et al. Cyclobutane derivatives as novel nonpeptidic small molecule agonists of glucagon-like peptide-1 receptor. *J. Med. Chem.* **2012**, *55*(1), 250-267.

- 29) H Gao, N Li, et al. Definitive diagnosis of hepatic sinusoidal obstruction syndrome induced by pyrrolizidine alkaloids. *J. Dig. Dis.* **2012**, *13*, 33-39.
- 30) B Ma, S Chai, N Li, et al. Reversal of P-glycoprotein-mediated multidrug resistance by a synthetic  $\alpha$ -aminoxy peptidomimetic. *Int. J. Pharm.* **2012**, *424*, 33-39.
- 31) B Ma, N Li, G Lin. Importance of Metabolic Activation Study to the Safe Use of Chinese Herbal Medicines. *Curr. Drug Metab.* **2012**, *13*, 652-658.
- 32) G Lin,\* JY Wang,\* N Li, et al. Hepatic sinusoidal obstruction syndrome associated with consumption of *Gynura segetum*. *J. Hepatol.* **2011**, *54*, 666-673.
- 33) B Ma, HY Zha, N Li, et al. Effect of structural modification of  $\alpha$ -aminoxy peptides on their intestinal absorption and transport mechanism. *Mol. Pharmaceutics* **2011**, *8*, 1073-1082.
- 34) N Li, Q Xia, J Ruan, et al. Hepatotoxicity and tumorigenicity induced by metabolic activation of pyrrolizidine alkaloids in herbs. *Curr. Drug Metab.* **2011**, *12*, 823-834.