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朱國元博士，男，澳門科技大學副教授，博士生導師。朱國元博士與 2002 年獲南京中醫藥大學碩士學位。2011 年於香港浸會大學取得博士學位。1991-2011 年，曾先後在浙江省武義縣第二人民醫院藥劑科、深圳市金杉天然植物藥研究所、香港城市大學深圳研究院及香港浸會大學從事中藥質量、調劑及管理、新產品開發、中藥活性成分的分離及分子藥理學研究等工作。2011 年至 2012 年間，在香港浸會大學中醫藥學院進行博士後研究工作。於 2012 年 3 月加入澳門科技大學，在中藥質量研究國家重點實驗室進行博士後研究工作，2014 年 5 月轉任助理教授，2020 年 7 月至今任副教授。

現主要從事中藥活性成分的發現及中藥藥理學研究。在中藥化學研究方面，通過對烏藥、腫節風、蒼術、白術、火麻仁、桂枝、人參、川棟子、燈檯葉、鐵羅等中藥成分的研究發現新骨架化合物 60 個，新化合物近 400 個，在 Organic Letters、The Journal of Organic Chemistry、Journal of Natural Products、Phytochemistry、Journal of Agricultural and Food Chemistry 等 SCI 雜誌發表中藥化學方面的相關論文 50 餘篇。在藥理學研究方面，首次報導了人參中抗腫瘤活性成分原人參二醇通過內置網應激信號通路誘導凋亡的分子機制，參與了多種中藥活性成分對雌激素受體、表皮生長因數受體、NF- κ B 信號通路、腫瘤多藥耐藥、細胞自噬、凋亡、週期調控和分化等方面的藥效及分子機理研究，在 Biomed Pharmacother., European Journal of Pharmacology, Biochemical Pharmacology 等雜誌發表中藥藥理學方面的研究論文二十餘篇。共發表 SCI 論文 80 餘篇，總引用率 2115 次，H-index 為 27。主持澳門科技發展基金科研項目 4 項，負責澳門科技發展基金重大研發專項

子課題一項。申請國際專利 10 項。獲 2016 中珠醫療生命科學服務一等獎，2017 中銀學術研究優秀獎，2018 中珠醫療生命科學科研二等獎，2020 年澳門特別行政區科學技術獎自然科學獎二等獎（第 5 完成人）。

主持科研項目：

1. 澳門科學技術發展基金，0019/2022/AGJ，雙黃連口服製劑粵澳兩地深度開發關鍵技術與應用研究，2023/12-2025/11，MOP 109.2萬，在研，項目負責人
2. 澳門科學技術發展基金，0075/2019/AGJ，中藥霧化吸入製劑“銀黃吸入溶液”研發的關鍵技術研究，2020/1-2022/1，MOP 117.2萬，已結題，項目負責人
3. 澳門科學技術發展基金，0023/2019/AKP，融合人工智慧和多組學技術開展川貝母等六種中藥的多維度質量控制研究，2020/2-2023/1，MOP 800萬，已結題，子課題負責人
4. 澳門科學技術發展基金，0008/2019/A，烏藥中具TGF- β 抑制作用的活性成分發現及作用機理研究，2019/10-2021/10，MOP 42.79萬，已結題，項目負責人
5. 澳門科學技術發展基金，033/2015/A1，中藥中可選擇性上調Bip蛋白的木脂素醯胺類化合物的發現及其神經保護作用的研究，2015/11-2018/10，MOP 245.6萬，已結題，項目負責人

獲得學術獎勵

1. 澳門自然科學獎三等獎（第五完成人），2020，澳門特別行政區政府
2. 中珠醫療生命科學科研獎 二等獎，2018，中珠醫療控股股份有限公司
3. 澳門科技大學中銀學術研究獎優秀獎， 2017，中國銀行
4. 中珠醫療生命科學服務一等獎，2016，中珠醫療控股股份有限公司
5. 海南省科學技術獎特等獎(第十三完成人)，2011，海南省人民政府

授權發明專利：

1. **Zhu Guo-Yuan**, Jiang Zhi-Hong, Yang Ji, Yao Xiao-Jun, Liu Xin, Fu Jing, Bai Li-Ping, Liu Liang. Novel lignanamides and a method of treating neurodegenerative diseases by using the same. Granted Innovation Pat. (Aust.) (2017), AU 2017100992 A4 20170824.

2. **Zhu Guo-Yuan**, Bai Li-Ping, Liu Liang, Jiang Zhi-Hong. Limonoids from the fruits of *Melia toosendan* and their NF- κ B modulating activities. Granted Innovation Pat. (Aust.) (2014), AU 2014100777 A4 20140814.

3. **Zhu Guo-Yuan**, Bai Li-Ping, Chen Guang-Ying, Liu Liang, Jiang Zhi-Hong. Isolation and bioactivity of lactam-bearing limonoids from the twigs and leaves of *Amoora tsangii*. Granted Innovation Pat. (Aust.) (2014), AU 2014100738 A4 20140731.

發表學術論文（第一或通訊作者）：

1. Fu L, Wang CC, Tian W, Liu Z, Bao MY, Liu J, Zhang W, Bai LP*, Jiang ZH*, **Zhu GY***. NMR-Guided Isolation of Anti-inflammatory Carabranolides from the Fruits of *Carpesium abrotanoides* L. *J Nat Prod*. 2024, 87(7):1786-1797.
2. Lin ZR, Bao MY, Xiong HM, Cao D, Bai LP, Zhang W, Chen CY, Jiang ZH*, **Zhu GY***. Boswellianols A-I, Structurally Diverse Diterpenoids from the Oleo-Gum Resin of *Boswellia carterii* and Their TGF- β Inhibition Activity. *Plants*. 2024,13(8):1074.
3. Chen FL, Liu DL, Ren WJ, Xiong HM, Bai LP, Zhang W, Hon C, Jiang ZH*, **Zhu GY***. Atrachinenins D-S, novel meroterpenoids with geranyl hydroquinone moiety from *Atractylodes chinensis* by the LC/MS-based molecular decoy and targeted isolation. *Bioorg Chem*. 2024, 144:107111.
4. Fu L, Tian W, Bao MY, Liu Z, Ren WJ, Liu J, Zhang W, Zhang Z, Gao J, Bai LP*, Jiang ZH*, **Zhu GY***. Cevanine-type alkaloids from the bulbs of *Fritillaria unibracteata* var. *wabuensis* and their antifibrotic activities in vitro. *Phytochemistry*. 2024, 220:114018.
5. Ren WJ, Jiang R, Ng KF, Bao MY, Liu XM, Zhang W, Jiang ZH, Liu YH*, **Zhu GY***. Diterpenoids and Triterpenoids from the Aerial Parts of *Isodon serra* and Their Biological Activities. *ACS Omega*. 2024, 9(49):48791-48801.
6. Jiang R, Ren WJ, Wang LY, Zhang W, Jiang ZH*, **Zhu GY***. Targeting Lactate: An Emerging Strategy for Macrophage Regulation in Chronic Inflammation and Cancer. *Biomolecules*. 2024, 14(10):1202
7. Ren WJ, Io CC, Jiang R, Ng KF, Liu JZ, Bai LP, Zhang W, Jiang ZH, Liu YH, Zhu GY. Di- and Triterpenoids from the Rhizomes of *Isodon amethystoides* and Their Anti-inflammatory Activities. *J Nat Prod*. 2023, 86(5):1230-1239.
8. Lyu HY, Bao MY, Io CC, Xiong HM, Chen FL, Bai LP, Zhang W, Jiang ZH*, **Zhu GY***. Sesquiterpenoids from the roots of *Aucklandia costus* and their anti-inflammatory activities.

Fitoterapia. 2023, 169:105604.

9. Xiong HM, Li HY, Lin ZR, Liu XM, Bai LP, Zhang W, Jiang ZH, Zhu GY. Chemical Constituents from the Fruits of *Amomum kravanh* and Their Role in Activating Alcohol Dehydrogenase. *Molecules*. 2023, 28(12):4878.
10. Shen RS, Cao D, Chen FL, Wu XJ, Gao J, Bai LP, Zhang W, Jiang ZH*, **Zhu GY***. New Monoterpene-Conjugated Phenolic Constituents from Nutmeg and Their Autophagy Modulating Activities. *J Agric Food Chem*. 2022, 70(31):9684-9693.
11. Chen FL, Liu DL, Fu J, Fu L, Gao J, Bai LP, Zhang W, Jiang ZH*, **Zhu GY***. Atrachinenynes A–D, four diacetylenic derivatives with unprecedented skeletons from the rhizomes of *Atractylodes chinensis*. *New J. Chem.*, 2022, 46, 15530
12. Dong Y#, **Zhu G#**, Wang SF, Keon KA, Rubinstein JL, Zeng SX, Zhang S, Chen QL, Fu J, Li M, Shen HM, Lu JJ, Chen XP, Lu JH. Toosendanin, a novel potent vacuolar-type H⁺-translocating ATPase inhibitor, sensitizes cancer cells to chemotherapy by blocking protective autophagy. *Int J Biol Sci*. 2022, 18(7):2684-2702.
13. Lu JG, Wang Y, Yang MR, Wang CY, Meng J, Liu J, Yang Z, Wu K, Bai LP*, **Zhu GY***, Jiang ZH*. Structures, biomimetic synthesis, and anti-SARS-CoV-2 activity of two pairs of enantiomeric phenylpropanoid-conjugated protoberberine alkaloids from the rhizomes of *Corydalis decumbens*. *Arch Pharm Res*. 2022, 45(9):631-643.
14. Wu XJ, Cao D, Chen FL, Shen RS, Gao J, Bai LP, Zhang W, Jiang ZH*, **Zhu GY***. Chlorfortunones A and B, Two Sesquiterpenoid Dimers, Possessing Dispiro[4,2,5,2]pentadecane-6,10,14-tren Moiety from *Chloranthus fortunei*. *ACS Omega*. 2022, 7(39):35063-35068.
15. Chen FL, Liu DL, Fu J, Yang J, Bai LP, Zhang W, Jiang ZH* and **Zhu GY***. (±)-Atrachinenins A—C, Three Pairs of Caged C27 Meroterpenoids from the Rhizomes of *Atractylodes chinensis*. *Chin. J. Chem.*, 2022,40: 460-466.
16. Shang Q, Zhou X, Yang MR, Lu JG, Pan Y, **Zhu GY***, Jiang ZH*. Amide Derivatives of Ginkgolide B and Their Inhibitory Effects on PAF-Induced Platelet Aggregation. *ACS Omega*. 2021, 6(35): 22497-22503.
17. Liu X, Fu J, Shen RS, Wu XJ, Yang J, Bai LP, Jiang ZH*, **Zhu GY***. Linderanoids A-O, dimeric sesquiterpenoids from the roots of *Lindera aggregata* (Sims) Kosterm. *Phytochemistry*. 2021, 191:112924.
18. Liu X, Yang J, Fu J, Xu PL, Xie TG, Bai LP, Jiang ZH*, **Zhu GY***. Monoterpene-flavonoid conjugates from *Sarcandra glabra* and their autophagy modulating activities. *Bioorg Chem*. 2021, 112: 104830
19. Liu X, Fu J, Yang J, Huang AC, Li RF, Bai LP, Liu L, Jiang ZH*, **Zhu GY***. Linderaggrenolides A-N, Oxygen-Conjugated Sesquiterpenoid Dimers from the Roots of *Lindera aggregata*. *ACS Omega*. 2021, 6(8): 5898-5909.
20. Chen FL, Zhang HS, Yang J, Chai L, Zhong M, Liu B, Yuan J, Jiang ZH, **Zhu GY***. Phytochemical and chemotaxonomic studies on *Phyllodium pulchellum* (Leguminosae). *Biochem Syst Ecol* 2021, 95: 104243
21. Yang J, Liu X, Fu J, Lyu HY, Bai LP, Jiang ZH*, Zhu GY*. Calycindaphines A–J,

- Daphniphyllum alkaloids from the roots of Daphniphyllum calycinum. **RSC Advances** 2021, 11 (16): 9057-9066.
22. Liu X, Yang J, Fu J, Yao XJ, Wang JR, Liu L, Jiang ZH*, **Zhu GY***. Aggreganoids A-F, Carbon-Bridged Sesquiterpenoid Dimers and Trimers from *Lindera aggregata*. **Org Lett.** 2019, 21(14): 5753-5756.
 23. Liu X, Yang J, Yao XJ, Yang X, Fu J, Bai LP, Liu L, Jiang ZH*, **Zhu GY***. Linderalides A-D, Disesquiterpenoid-Geranylbenzofuranone Conjugates from *Lindera aggregata*. **J Org Chem.** 2019, 84(12):8242-8247.
 24. Xu J#, **Zhu GY#**, Cao D, Pan H, Li YW. Gossypol overcomes EGFR-TKIs resistance in non-small cell lung cancer cells by targeting YAP/TAZ and EGFR L858R/T790M. **Biomed Pharmacother.** 2019, 115:108860.
 25. **Zhu GY***, Yang J, Yao XJ, Yang X, Fu J, Liu X, Bai LP, Liu L, Jiang ZH*. (±)-Sativamides A and B, Two Pairs of Racemic Nor-Lignanamide Enantiomers from the Fruits of *Cannabis sativa*. **J Org Chem.** 2018, 16;83(4): 2376-2381.
 26. Liu X, Fu J, Yao XJ, Yang J, Liu L, Xie TG, Jiang PC, Jiang ZH, * **Zhu GY***. Phenolic Constituents Isolated from the Twigs of *Cinnamomum cassia* and Their Potential Neuroprotective Effects. **J Nat Prod.** 2018,22;81(6): 1333-1342.
 27. Liu X, Yang J, Fu J, Xie TG, Jiang PC, Jiang ZH, **Zhu GY***. Phytochemical and chemotaxonomic studies on the twigs of *Cinnamomum cassia* (Lauraceae). **Biochem. Syst. Ecol.** 2018, 81, 45-48
 28. Yang J, Fu J, Liu X, Jiang ZH, **Zhu GY***. Monoterpenoid indole alkaloids from the leaves of *Alstonia scholaris* and their NF-κB inhibitory activity. **Fitoterapia.** 2018, 124:73-79.
 29. **Zhu GY**, Yao XJ, Liu L, Bai LP*, Jiang ZH*. Alistonitrine A, a Caged Monoterpene Indole Alkaloid from *Alstonia scholaris*. **Org Lett.** 2014, 16(4): 1080-1083.
 30. **Zhu GY**, Bai LP, Liu L*, Jiang ZH*. Limonoids from the fruits of *Melia toosendan* and their NF-κB modulating activities. **Phytochemistry.** 2014, 107:175-81.
 31. **Zhu GY**, Chen G, Liu L, Bai LP*, Jiang ZH*. C-17 lactam-bearing limonoids from the twigs and leaves of *Amoora tsangii*. **J Nat Prod.** 2014, 77(4): 983-9.
 32. **Zhu GY**, Wong BC, Lu A, Bian ZX, Zhang G, Chen HB, Wong YF, Fong WF*, Yang Z*. Alkylphenols from the Roots of *Ardisia brevicaulis* Induce G1 Arrest and Apoptosis through Endoplasmic Reticulum Stress Pathway in Human Non-small-cell Lung Cancer Cells. **Chem Pharm Bull.** 2012, 60(8): 1029-1036.
 33. **Zhu GY**, Li YW, Tse AK, Hau DK, Leung CH, Yu ZL, Fong WF*. 20(S)-Protopanaxadiol, a metabolite of ginsenosides, induced cell apoptosis through endoplasmic reticulum stress in human hepatocarcinoma HepG2 cells. **Eur J Pharmacol.** 2011, 668(1-2): 88-98.
 34. **Zhu GY**, Li YW, Hau DKP, Jiang ZH, Yu ZL, Fong WF*. Protopanaxatriol-Type Ginsenosides from the Root of *Panax ginseng*. **J Agric Food Chem.** 2011, 59(1): 200-5.
 35. **Zhu GY**, Li YW, Hau DK, Jiang ZH, Yu ZL, Fong WF. Acylated protopanaxadiol-type ginsenosides from the root of *Panax ginseng*. **Chem Biodivers.** 2011, 8(10): 1853-63.