

Prof. Zhibing Wu

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Research field: Plant pathology research, Design and synthesis of active small molecules

Google Scholar: <http://gpabl.gzu.edu.cn/2024/0722/c19837a225833/page.htm>



Profile

- Zhi Bing Wu is a senior pesticide scientist of Guizhou University. His research mainly focuses on design and synthesis of small molecules of pesticides, action mechanisms of highly active molecules, and the pathogenic mechanism of plant diseases. He has been the principal investigator of five National Natural Science Foundation of China grants and three Guizhou provincial grants. He has participated in one Ministry of Science and Technology research program and several provincial and ministerial research projects. Wu has published more than 50 scientific papers in national and international journals, such as *J. Agric. Food Chem.*, *Pestic. Biochem. Phys.*, *Pest Manag. Sci.*, *Chinese Chem. Lett.*, *Bioorg. Chem.*, *Int. J. Mol. Sci.* et al. He also holds six national invention patents.

Positions Held

- 2022/01 – Present, Professor, **Guizhou University**, China
- 2014/09 – 2021/12, Associate Professor, **Guizhou University**, China
- 2010/07 – 2013/08, Lecturer, **Guizhou University**, China

Important Publications

- [1] L.J. Li, D.T. Shi, D.D. Song, K. Chen, J.L. Zhang*, A. Riaz, **Z.B. Wu***. Quality control strategy for post-harvest fragrant pears: Pathogenesis of brown rot caused by *Monilinia fructicola* and protective mechanism of carvacrol. *Pest Manag. Sci.*, **2025**, 81: 5350-5359.
- [2] K. Chen, D.D. Song, D.T. Shi, L.J. Li, **Z.B. Wu***. Synthesis and Activity of Novel Pyrazole/Pyrrrole Carboxamides Containing Dinitrogen Six-membered Heterocyclic as Succinate Dehydrogenase and Ergosterol Biosynthesis Inhibitors against *Colletotrichum camelliae*. *J. Agric. Food Chem.*, **2025**, 73(18), 10914-10922.
- [3] R. Wen, D.D. Song, C.J. Liang, G. Twagirayezu, Y.P. Wang, D.H. Tu, Z.Y. Luo, S.C. Zhang, D. Xing*, **Z.B. Wu***, K.Y. Wu*. Effects of fungicide application on susceptible pepper cultivar under southern blight stress. *Sci. Hortic-Amsterdam*, **2025**, 342, 114030.
- [4] L. Ji, M. Liu, S.Y. Yu, **Z.B. Wu***, B. Chen*. Synthesis, molecular docking simulation, and antifungal activities of novel strobilurin derivatives containing covalent reactive warheads. *J. Mol. Structure*, **2025**, 1344, 143016.
- [5] D.D. Song, R. Wen, K. Chen, F.L. Wen, D. Xing*, **Z.B. Wu***. Application of thifluzamide to stem rot in peppers: Infection and control mechanisms of *sclerotium rolfsii*. *Pestic. Biochem. Phys.*, **2024**, 200, 105846.
- [6] F.L. Wen, Z.X. Liu, Y. Zheng, D.D. Song, K. Chen, **Z.B. Wu***. Repairing host damage caused by TMV stress: Design, synthesis and mechanism study of novel oxadiazole and arylhydrazones derivatives. *J. Agric. Food Chem.*, **2024**, 72 (20), 11351-11359.
- [7] Y.Q. Zhang, X. Wang, H.B. Shi, F. Siddique, J.X. Xian, A.T. Song, B.L. Wang, **Z.B. Wu***, Z.N. Cui*. Design and synthesis of mandelic acid derivatives for suppression of virulence via T3SS against citrus canker. *J. Agric. Food Chem.*, **2024**, 72 (20), 9611-9620.
- [8] X.C. Chen, X. Niu, L.J. Li, K. Chen, D.D. Song, B. Chen*, S. Yang*, **Z.B. Wu***. Design, synthesis and target identification of novel phenylalanine derivatives by Drug Affinity Responsive Target Stability (DARTS) in *Xanthomonas oryzae* pv. *oryzae*. *J. Agric. Food Chem.*, **2024**, 72, 3436-3444.
- [9] Y. Zheng, D.T. Shi, D.D. Song, K. Chen, F.L. Wen, J.L. Zhang*, W. Xue*, **Z.B. Wu***. Novel mandelic acid derivatives containing piperazinyls as potential candidate fungicides against *Monilinia fructicola*: Design, synthesis and mechanism study. *Bioorg. Chem.*, **2024**, 151, 107647.

- [10] C.Z. Zhang, J.X. Yang, C.L. Zhao, L.J. Li, **Z.B. Wu***. Potential fungicide candidates: Dual action mode study of novel pyrazole-4-carboxamides against *Gibberella zeae*. *J. Agric. Food Chem.*, **2023**, 71(4), 1862-1872.
- [11] S.T. Hou, H.B. Shi, H. Zhang, **Z.B. Wu***, Deyu Hu. Synthesis, antifungal evaluation, 3D-QSAR and preliminarily mechanism study of novel chiral mandelic acid derivatives. *J. Agric. Food Chem.*, **2023**, 71(20), 7631-7641.
- [12] C.Z. Zhang, C.L. Zhao, H.L. Zheng, L.J. Li, Y. Zheng, **Z.B. Wu***. Design, synthesis and study of the dual action mode of novel *N*-thienyl-1,5-disubstituted-4-pyrazole carboxamides against *Nigrospora oryzae*. *J. Agric. Food Chem.*, **2023**, 71(19), 7210-7220.
- [13] Q.Q. Guo, Y.Z. Li, H.B. Shi, A.Y. Yi, X.L. Xu, H.H. Wang, X. Deng, **Z.B. Wu***, Z.N. Cui*. Novel mandelic acid derivatives suppress virulence of *Ralstonia solanacearum* via type III secretion system. *Pest Manag. Sci.*, **2023**, 79, 4626-4634.
- [14] B. Chen, D.D. Song, H.B. Shi, K. Chen, **Z.B. Wu***, H.F. Chai*. Design, synthesis, *in vitro* antifungal activity and mechanism study of the novel 4-substituted mandelic acid derivatives. *Int. J. Mol. Sci.*, **2023**, 24(10), 8898.
- [15] H.B. Shi, L.J. Li, D.D. Song, Y. Zheng, **Z.B. Wu***. *In vitro/vivo* antifungal activity study of novel mandelic acid derivatives as potential fungicides against *Thanatephorus cucumeris*. *Arabian Journal of Chemistry*, **2023**, 16, 104884.
- [16] H.L. Zheng, F.L. Wen, C.Z. Zhang, R. Luo, **Z.B. Wu***. Novel 1,3,4-thiadiazole derivatives: Synthesis, antiviral bioassay, and regulation the photosynthetic pathway of tobacco against TMV infection. *Int. J. Mol. Sci.*, **2023**, 24(10), 8881.
- [17] J.X. Yang, D.W. Xie, C.Z. Zhang, C.L. Zhao, **Z.B. Wu***, W. Xue*. Synthesis, antifungal activity and *in vitro* mechanism of novel 1-substituted-5-trifluoromethyl-1*H*-pyrazole-4-carboxamide derivatives. *Arab. J. of Chem.*, **2022**, 15, 103987-103997.
- [18] X. Zhou, Y.Q. Ye, S.S. Liu, W.B. Shao, L.W. Liu, S. Yang*, **Z.B. Wu***. Design, synthesis and anti-TMV activity of novel α -aminophosphonate derivatives containing a chalcone moiety that induce resistance against plant disease and target the TMV coat protein. *Pestic. Biochem. Phys.*, **2021**, 172, 104749.
- [19] G.Q. Yang, H.L. Zheng, W.B. Shao, L.W. Liu, **Z.B. Wu***. Study of the *in vivo* antiviral activity against TMV treated with novel 1-(*t*-butyl)-5-amino-4-pyrazole derivatives containing a 1,3,4-oxadiazole sulfide moiety. *Pestic. Biochem. Phys.*, **2021**, 171, 104740.
- [20] **Z.B. Wu***, W.Q. Yang, S.T. Hou, D.W. Xie, J.X. Yang, L.W. Liu, S. Yang*. *In vivo* antiviral activity and disassembly mechanism of novel 1-phenyl-5-amine-4-pyrazole thioether derivatives against Tobacco mosaic virus. *Pestic. Biochem. Phys.*, **2021**, 173, 104771.
- [21] **Z.B. Wu**, H.Y. Park, D.W. Xie, J.X. Yang, S.T. Hou, N. Shahzad, C.K. Kim*, S. Yang*. Synthesis, biological evaluation and 3D-QSAR studies of *N*-(substituted pyridine-4-yl)-1-(substituted phenyl)-5-trifluoromethyl-1*H*-pyrazole-4-carboxamide derivatives as potential succinate dehydrogenase inhibitors. *J. Agric. Food Chem.*, **2021**, 69, 1214-1223.

Projects

- National Natural Science Foundation of China: (No. 32460695), 2025.1-2028.12
- Bijie Tobacco Project: (No. 2024SMXM02), 2024.1-2026.12
- National Natural Science Foundation of China: (No.32160655), 2022.1-2025.12
- Technology Project of Guizhou province: (No. [2017]4108), 2017.07-2020.06
- National Natural Science Foundation of China: (No. 21662008), 2017.1-2020.12
- National Natural Science Foundation of China: (No. 21462011), 2015.1-2018.12
- National Natural Science Foundation of China: (No. 21202025), 2013.1-2015.12

Patents

1. Method for preparation of 2-(1-substituted-5-amino-4-pyrazolyl)-1,3,4-diazole-5-yl sulfide or sulfone derivatives and application for preventing and controlling plant virus diseases, 2016.07.06, CN103880836 A
2. Pyrazole oxadiazole thioether compound, preparation and application against activity of tobacco mosaic virus, 2019.11.15, CN106496212 A
3. 4-(5-(R^1 -thio)-1,3,4-oxadiazol-2-yl)-1-phenyl-1*H*-pyrazol-5-amine compound, its application in preventing plant virus disease caused by tobacco mosaic virus and preparation, 2020.10.27, CN107880033 A
4. Process for preparation of mandelic acid derivative containing 1,3,4-oxadiazole thioether structure, 2022.05.24, CN108997253 A
5. Preparation of 1-*tert*-butyl-5-amino-4-pyrazole-linked 1,3,4-oxadiazole sulfide compound and its application, 2023.01.31, CN111646984 A
6. Preparation of benzophenone compounds containing 1,3,4-thiadiazole sulfide structure and its application, 2023.11.24, CN113563281 A

Academic honors & awards

- 1,000 people in Guizhou Province. Time: 2021