



2024年第5期 总418期

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1. 含有吡啶甲酰胺化合物的杀菌组合物和控制植物病原真菌的方法

中国农业科学院农业信息研究所

联系人：王玉芹

联系电话：010-82109896

邮箱：[agri@ckcest.cn](mailto:agri@ckcest.cn)

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## ➤ 前沿资讯

### 1. Perspective: Brewing Tradition in a Modern Cup – How Tea Businesses Are Adapting to Evolution (展望：在现代茶杯中的冲泡传统——茶企业如何适应发展)

简介：In the fast-paced whirlwind of the modern world, where convenience and innovation reign supreme, the ancient tradition of tea-drinking finds itself at a fascinating intersection. Tea businesses are navigating this delicate balance by adapting to the preferences of contemporary consumers while safeguarding the integrity of the plant and its rich history. Traditional teas, while timeless, are no longer the sole stars in the tea business repertoire. To captivate modern taste buds, tea businesses are embracing innovation in their blends. Exotic herbs, spices and fruits are artfully combined to create teas that pay homage to tradition while introducing new and exciting flavor profiles. The art of tea-making is evolving, resulting in a diverse and captivating range of brews that cater to a more adventurous palate. The tea industry is undergoing a fascinating transformation. By embracing innovation, sustainability, education and a focus on wellness, tea businesses are not merely conforming to modern preferences but are actively shaping the future of tea-drinking. It's a delicate approach to tradition and innovation, a journey that ensures the continuation of a practice that has withstood the test of time.

来源：World Tea News 网站

发布日期：2024-01-04

全文链接：<http://agri.nais.net.cn/file1/M00/10/36/Csgk0GWojwWACfHvAAXkR8BmclQ985.pdf>

## ➤ 学术文献

### 1. Enantioselective Behaviors of Chiral Pesticides and Enantiomeric Signatures in Foods and the Environment (手性农药的对映选择行为及其在食品和环境中的对映体特征)

简介：Unreasonable application of pesticides may result in residues in the environment and foods. Chiral pesticides consist of two or more enantiomers, which may exhibit different behaviors. This Review intends to provide progress on the enantioselective residues of chiral pesticides in foods. Among the main chiral analytical methods, high performance liquid chromatography (HPLC) is the most frequently utilized. Most chiral pesticides are utilized as racemates; however, due to enantioselective dissipation, bioaccumulation, biodegradation, and chiral conversion, enantiospecific residues have been found in the environment and foods. Some chiral pesticides exhibit strong enantioselectivity, highlighting the importance of evaluation on an enantiomeric level. However, the occurrence characteristics of chiral pesticides in foods and specific enzymes or transport proteins involved in enantioselectivity needs to be further investigated. This Review could help the production of some chiral pesticides to single-enantiomer formulations, thereby reducing pesticide consumption as well as increasing food production and finally reducing human health risks.

来源：Journal of Agricultural and Food Chemistry 期刊

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## 2. Design and Synthesis of Novel Oxathiapiprolin Derivatives as Oxysterol Binding Protein Inhibitors and Their Application in Phytopathogenic Oomycetes (新型氧化固醇结合蛋白抑制剂氟噻唑吡乙酮衍生物的设计合成及其在植物致病卵菌中的应用)

简介: Oomycetes, particularly those from the genus *Phytophthora*, are significant threats to global food security and natural ecosystems. Oxathiapiprolin (OXA) is an effective oomycete fungicide that targets an oxysterol binding protein (OSBP), while the binding mechanism of OXA is still unclear, which limits the pesticide design, induced by the low sequence identity of *Phytophthora* and template models. Herein, we generated the OSBP model of the well-reported *Phytophthora capsici* using AlphaFold 2 and studied the binding mechanism of OXA. Based on it, a series of OXA analogues were designed. Then, compound 2l, the most potent candidate, was successfully designed and synthesized, showing a control efficiency comparable to that of OXA. Moreover, field trial experiments showed that 2l exhibited nearly the same activity (72.4%) as OXA against cucumber downy mildew at 25 g/ha. The present work indicated that 2l could be used as a leading compound for the discovery of new OSBP fungicides.

来源: Journal of Agricultural and Food Chemistry 期刊

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## 3. Enantioselective aquatic toxicity and degradation in soil of the chiral fungicide oxathiapiprolin (手性杀菌剂氟噻唑吡乙酮的对映选择性水生生物毒性及其在土壤中的降解)

简介: Oxathiapiprolin is an efficient and chiral fungicide for peronosporomycetes. The enantioselective environmental behavior and ecotoxicity of oxathiapiprolin are still unclear. The enantioselectivity of oxathiapiprolin enantiomers was explored, including their acute toxicity toward aquatic plants (*Auxenochlorella pyrenoidosa* and *Soiodela polyrhiza*) along with their influence on photosynthetic pigment production, the acute toxicity and morphological differences for the embryos, larvae and adult stages of zebrafish (*Danio rerio*), and the degradation in four typical soils (aerobic, anaerobic and sterilized conditions). The enantioselective toxicity of oxathiapiprolin showed that the toxicity of *R*-oxathiapiprolin was 1.8–2.1 times higher than that of *S*-oxathiapiprolin toward the two aquatic plants. In particular, the content of photosynthetic pigments decreased significantly stronger after exposure to *R*-oxathiapiprolin compared with *S*-oxathiapiprolin. The  $LC_{50}$  values of *R*-oxathiapiprolin in zebrafish in the different life stages were 1.6–2.1 times higher than those of *S*-oxathiapiprolin. The zebrafish embryos were most sensitive to the oxathiapiprolin enantiomers. After exposure to *R*-oxathiapiprolin, zebrafish embryos showed noticeable hatching delays, inhibition or deformation. *R*-oxathiapiprolin degraded preferentially in all four soils, with an enantiomeric fraction (EF) ranging from 0.28 to 0.42 under aerobic conditions. Enantioselective degradation was not found under anaerobic and sterilized conditions. The enantioselectivity of new chiral pesticides should be fully considered in risk assessments to provide a basis for the

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development and preparation of pure optical enantiomers.

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#### 4. Enantioselective Detection, Bioactivity, and Degradation of the Novel Chiral Fungicide Oxathiapiprolin (新型手性杀菌剂氟噻唑吡乙酮的对映体选择性检测、生物活性及降解)

简介: Oxathiapiprolin is a novel chiral piperidine thiazole isooxazoline fungicide that contains a pair of enantiomers. An effective analytical method was established for the enantioselective detection of oxathiapiprolin in fruit, vegetable, and soil samples using ultraperformance liquid chromatography-tandem triple quadrupole mass spectrometry. The optimal enantioseparation was achieved on a Chiralpak IG column at 35 °C using acetonitrile and 0.1% formic acid aqueous solution (90:10, v/v) as the mobile phase. The absolute configuration of the oxathiapiprolin enantiomers was identified with the elution order of *R*-(-)-oxathiapiprolin and *S*-(+)-oxathiapiprolin by electron circular dichroism spectra. The bioactivity of *R*-(-)-oxathiapiprolin was 2.49 to 13.30-fold higher than that of *S*-(+)-oxathiapiprolin against six kinds of oomycetes. The molecular docking result illuminated the mechanism of enantioselectivity in bioactivity. The glide score (-8.00 kcal/mol) for the *R*-enantiomer was better with the binding site in *Phytophthora capsici* than the *S*-enantiomer (-7.50 kcal/mol). Enantioselective degradation in tomato and pepper under the field condition was investigated and indicated that *R*-(-)-oxathiapiprolin was preferentially degraded. The present study determines the enantioselectivity of oxathiapiprolin about enantioselective detection, bioactivity, and degradation for the first time. The *R*-enantiomer will be a better choice than racemic oxathiapiprolin to enhance the bioactivity and reduce the pesticide residues at a lower application rate.

来源: Journal of Agricultural and Food Chemistry 期刊

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### ➤ 相关专利

#### 1. Fungicidal composition containing picolinamide compound, and method for controlling plant pathogenic fungi (含有吡啶甲酰胺化合物的杀菌组合和控制植物病原真菌的方法)

简介: 本发明涉及一种含有吡啶酰胺化合物的杀菌剂组合物。所述杀菌剂组合物包括活性成分化合物(I)和氟噻唑吡乙酮, 所述化合物I与氟噻唑吡乙酮的重量比为50:1~1:25。此外, 还提供了一种预防或控制植物病原真菌对植物、植物部位、植物繁殖材料和随后生长的植物器官侵袭的方法。

来源: 世界知识产权组织

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