



2023年第32期 总393期

## 茶学研究专题

### 本期导读

#### ➤ 学术文献

1. 植物中挥发性有机化合物异戊二烯和蒎烯生物合成酶的进化见解
2. 光协同促进茶小绿叶蝉侵害诱导的芳樟醇氧化物及其茶苷的积累
3. 植物生物相互作用研究的持续延伸
4. 异戊二烯和 $\beta$ -石竹烯通过不同的植物内部信号通路赋予植物抗性

#### ➤ 会议论文

1. 当代伏安技术及其在农药分析中的应用：综述

#### ➤ 科技图书

1. 土传植物病原体的检测、诊断和管理

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)

2023年08月07日

## 学术文献

### 1. Evolutionary Insights into the Enzymes involved in the Biosynthesis of the Volatile Organic Compounds Isoprene and Pinene in Plants (植物中挥发性有机化合物异戊二烯和蒎烯生物合成酶的进化见解)

简介: Volatile organic compounds (often abbreviated as VOCs) are emitted as secondary metabolites by plants, and contribute to a wide range of ecological processes, owing to their pivotal role in plant interactions with biotic and abiotic variables. As a result, they differ greatly between species and explain disparities in ecological strategy. In an effort to comprehend their genesis and assess potential evolutionary trends, this work probes into the enzymatic pathways that lead to their synthesis. Correspondingly, we adopt and propose an in-silico approach to analyze connections between the species evolution and the gene evolution of two major plant volatile organic compounds. We lay focus on isoprene and pinene, volatile organic compounds synthesized by two common yet compartmentally isolated pathways - the methylerythritol phosphate (MEP) pathway and the mevalonic acid (MVA) pathway, respectively. Analyses of gene-specific and protein-specific phylogenetic trees of the enzymes involved in these pathways thereby indicate a mixed trend in the evolution as per the APG IV (Angiosperm Phylogeny Group IV) system. These results and the in-silico pipeline thus provide us with future opportunities to explore different networks of plant communication for a holistic understanding of intraspecific and interspecific interactions in different natural ecosystems.

来源: Plant Science Today 期刊

发布日期:2023-01-14

全文链接:[http://agri.ckcest.cn/file1/M00/10/2E/Csgk0GS1\\_ckAVAlbABCjOGkX-W8385.pdf](http://agri.ckcest.cn/file1/M00/10/2E/Csgk0GS1_ckAVAlbABCjOGkX-W8385.pdf)

### 2. Light synergistically promotes the tea green leafhopper infestation-induced accumulation of linalool oxides and their glucosides in tea (*Camellia sinensis*) (光协同促进茶小绿叶蝉侵害诱导的芳樟醇氧化物及其茶苷的积累)

简介: Linalool, which is one of the most representative aroma substances in tea, is transformed into other aroma-related compounds, including linalool 3,6-oxides and linalool 3,7-oxides. The objective of this study was to elucidate the linalool oxide synthesis pathway and its response to stress in tea. By feeding experiment, chemical synthesis, and compound analysis, it was found that linalool can be transformed to linalool oxides via 6,7-epoxylinalool. The conversion rate from 6,7-epoxylinalool to linalool oxides was relatively high under acidic conditions. Four linalool oxide glucosides obtained from tea were structurally characterized. Additionally, tea green leafhopper infestation was observed to activate the whole metabolic flow from linalool into linalool oxides and their glucosides ( $p < 0.01$ ). Moreover, light treatments further increased the accumulation of linalool oxides and their glucosides ( $p < 0.05$ ). These results will be useful for elucidating the mechanism mediating linalool oxides content changes in response to stress in tea.

来源: Food Chemistry 期刊

发布日期:2022-11-15

全文链接:<http://agri.ckcest.cn/file1/M00/10/2E/Csgk0GS16WmACFaqAGeACA-Titc427.pdf>

### 3. A Continuous Extension of Plant Biotic Interactions Research (植物生物相互作用研究的持续延伸)

简介: Plants do not live alone in nature but in intimate association with diverse living organisms, including infectious microbes—from mutualists, commensals to pathogens—, herbivorous insects and animals, as well as with other plants that compete or cooperate with them. Biotic interactions seem to have provided a major driving force in the diversification and evolution of plants. Therefore, it can be said that almost nothing in plant biology makes sense except in light of plant biotic interactions.

来源: Plant and Cell Physiology 期刊

发布日期:2022-09-22

全文链接:[http://agri.ckcest.cn/file1/M00/03/5C/Csgk0YkMI3eAHNCzAALGwMs\\_z5A395.pdf](http://agri.ckcest.cn/file1/M00/03/5C/Csgk0YkMI3eAHNCzAALGwMs_z5A395.pdf)

### 4. Isoprene and beta-caryophyllene confer plant resistance via different plant internal signalling pathways (异戊二烯和 $\beta$ -石竹烯通过不同的植物内部信号通路赋予植物抗性)

简介: Isoprene and other terpenoids are important biogenic volatile organic compounds in terms of atmospheric chemistry. Isoprene can aid plant performance under abiotic stresses, but the fundamental biological reasons for the high emissions are not completely understood. Here, we provide evidence of a previously unrecognized ecological function for isoprene and for the sesquiterpene,  $\beta$ -caryophyllene. We show that isoprene and  $\beta$ -caryophyllene act as core components of plant signalling networks, inducing resistance against microbial pathogens in neighbouring plants. We challenged *Arabidopsis thaliana* with *Pseudomonas syringae*, after exposure to pure volatile terpenoids or to volatile emissions of transformed poplar or *Arabidopsis* plants. The data suggest that isoprene induces a defence response in receiver plants that is similar to that elicited by monoterpenes and depended on salicylic acid (SA) signalling. In contrast, the sesquiterpene,  $\beta$ -caryophyllene, induced resistance via jasmonic acid (JA)-signalling. The experiments in an open environment show that natural biological emissions are enough to induce resistance in neighbouring *Arabidopsis*. Our results show that both isoprene and  $\beta$ -caryophyllene function as allelochemical components in complex plant signalling networks. Knowledge of this system may be used to boost plant immunity against microbial pathogens in various crop management schemes.

来源: Plant, Cell & Environment 期刊

发布日期:2021-02-01

全文链接:<http://agri.ckcest.cn/file1/M00/03/5C/Csgk0YkMn-SAKRyvACn4uJZKqj4033.pdf>

## ➤ 会议论文

### 1. Contemporary voltammetric techniques and its application to

更多资讯 尽在农业专业知识服务系统:<http://agri.ckcest.cn/>

## **pesticide analysis: A review (当代伏安技术及其在农药分析中的应用: 综述)**

**简介:** The objective of the paper is to access the usefulness of contemporary voltammetric methodologies using various classical and modified electrode system and surface-active agents for wide range of application. Recent development in chemically modified electrode in term of sensitivity, selectivity and diverse applications leads to revolution in voltammetry techniques. Recent trends revealed that such contemporary voltammetric methods are reasonably explored in pesticide analysis of variety of thiourea, benzimidazoles, organophosphorus, dithiocarbamates, triazines, carbaryl, organochlorine, etc. Diversity and complexity of the pesticide structures create electroanalytical possibility to explored reactions potential range from cathodic to anodic along with a number of explored voltammetric techniques involving Hg, amalgam, Au, glassy carbon, carbon paste and BDD Electrode its further modification for their determination. However, in recent intervals the classical voltammetric techniques have almost been vanished and are being substitute by more advanced voltammetric methodologies for numerous analytical and mechanistic studies.

**来源:** Materials Today: Proceedings

**发布日期:** 2021-02-28

**全文链接:** <http://agri.ckcest.cn/file1/M00/03/5C/Csgk0YkM5NeAW1NSACc3v4aoiyI582.pdf>

## **科技图书**

### **1. Detection, Diagnosis and Management of Soil-borne Phytopathogens (土传植物病原体的检测、诊断和管理)**

**简介:** 本书提供了一个组学技术和方法的概述，跨多个组学层集成的用于植物疾病诊断和发展管理策略。介绍了各种重要作物的土壤传播病害管理的流行情况，使用不同的防治策略，包括寄主抗性和生物防治等。此外，还特别关注几种作物上出现的新病害或旧病害的重新出现，以及使用微生物接种剂、生物熏蒸和其他非化学防治方法所带来的结果和遇到的问题。本书共有18个章节，来自植物病理学、微生物学和生物技术领域的杰出专家在重要农作物土传病害的不同方面的研究。该书对植物病理学、农业科学、植物基因组学、生态学的研究人员、政策制定者非常有帮助，也是全球相关研究人员和学生有价值的参考来源。

**来源:** SpringerLink 网站

**发布日期:** 2023-03-28

**全文链接:** <http://agri.ckcest.cn/file1/M00/10/2E/Csgk0GS2TVmAJWRfAlrylyC2pnU571.pdf>