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茶学研究专题

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► 学术文献

1. Extracting spatial information from temporal odor patterns: insights from insects (从时间气味模式中提取空间信息：来自昆虫的见解)

简介: Extracting spatial information from temporal stimulus patterns is essential for sensory perception (e.g. visual motion direction detection or concurrent sound segregation), but this process remains understudied in olfaction. Animals rely on olfaction to locate resources and dangers. In open environments, where odors are dispersed by turbulent wind, detection of wind direction seems crucial for odor source localization. However, recent studies showed that insects can extract spatial information from the odor stimulus itself, independently from sensing wind direction. This remarkable ability is achieved by detecting the fine-scale temporal pattern of odor encounters, which contains information about the location and size of an odor source, and the distance between different odor sources.

来源: Current Opinion in Insect Science 期刊

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全文链接: <http://agri.nais.net.cn/file1/M00/10/30/Csgk0GUBCj2ANVUfACLhgoxMo74394.pdf>

2. Context and the functional use of information in insect sensory ecology (昆虫感官生态学中信息的语境与功能利用)

简介: Context-specific behaviors emerge from the interaction between an animal's internal state and its external environment. Although the importance of context is acknowledged in the field of insect sensory ecology, there is a lack of synthesis on this topic stemming from challenges in conceptualizing 'context'. We address this challenge by gleaning over the recent findings on the sensory ecology of mosquitoes and other insect pollinators. We discuss internal states and their temporal dynamics, from those lasting minutes to hours (host-seeking) to those lasting days to weeks (diapause, migration). Of the many patterns reviewed, at least three were common to all taxa studied. First, different sensory cues gain prominence depending on the insect's internal state. Second, similar sensory circuits between related species can result in different behavioral outcomes. And third, ambient conditions can dramatically alter internal states and behaviors.

来源: Current Opinion in Insect Science 期刊

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全文链接: <http://agri.nais.net.cn/file1/M00/03/5E/Csgk0YIYKrWAAAdv2AB9FgUoUOag083.pdf>

3. Analytical methods for the analysis of volatile natural products (挥发性天然产物的分析方法)

简介: This article reviews the latest developments of analytical methods of volatile natural products. Volatile organic compounds (VOCs) released from biological systems correspond to a series of compounds, originating from primary and secondary metabolites. These compounds are important for intra- and interspecies chemical communication and interaction of living organisms. These valuable natural products can find applications in many fields, including foods, human nutrition, pharmaceuticals, perfumes, cosmetics and so on. Therefore, the deciphering of their

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structures is of increasing importance in many fields of natural product chemistry. Due to the large diversity of these compounds, there is no “single” analytical instrument or method that can be used to study all of them. Furthermore, most of the volatile compounds can be collected only in low concentrations. Therefore, their detection, identification and structural characterization are challenging tasks. The review briefly describes the extraction and preparation methods of samples, then introduces the tools of instrumental analysis utilized to identify or quantify the VOCs of natural products, including spectroscopic and mass spectrometric methods, such as offline GC-MS, multi-dimensional GC-MS, and online approaches including PTR-MS, SIFT-MS, SEMI-MS, DART-MS etc. The current challenges of analytical techniques and future directions are also briefly discussed.

来源: Natural Product Reports 期刊

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全文链接:<http://agri.nais.net.cn/file1/M00/03/5E/Csgk0YIYIqCAGsDPAA5lFCNluc430.pdf>

4. Nonanal, a new fall armyworm sex pheromone component, significantly increases the efficacy of pheromone lures (壬醛是一种新的草地贪夜蛾性信息素成分, 可显著提高信息素引诱效率)

简介: Background: The fall armyworm (FAW), *Spodoptera frugiperda* (J.E. Smith), is a global pest that feeds on >350 plant species and severely limits production of cultivated grasses, vegetable crops and cotton. An efficient way to detect new invasions at early stages, and monitor and quantify the status of established infestations of this pest is to deploy traps baited with species-specific synthetic sex pheromone lures.

Results: We re-examined the compounds in the sex pheromone glands of FAW females by gas chromatography-electroantennogram detector (GC-EAD), GCmass spectrometry (MS), behavioral and field assays. A new bioactive compound from pheromone gland extracts was detected in low amounts (3.0% relative to (Z)-9-tetradecenyl acetate (Z9-14:OAc), the main pheromone component), and identified as nonanal. This aldehyde significantly increased attraction of male moths to a mix of Z9-14:OAc and (Z)-7-dodecenyl acetate in olfactometer assays. Adding nonanal to this two-component mix also doubled male trap catches relative to the two-component mix alone in cotton fields, whereas nonanal alone did not attract any moths. The addition of nonanal to each of three commercial pheromone lures also increased male catches by 53-135% in sorghum and cotton fields.

Conclusion: The addition of nonanal to pheromone lures should improve surveillance, monitoring and control of FAW populations.

来源: Pest Management Science 期刊

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全文链接:<http://agri.nais.net.cn/file1/M00/10/30/Csgk0GUBfYiAJOU6AA5MJ38zzM4807.pdf>

➤ 相关专利

1. OLFACTOMECHANO SENSORY DEVICE (昆虫嗅觉机械传感装)

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置)

简介: 一种昆虫嗅觉传感装置, 包括: 彼此相对的多个臂 (102a-102n), 其中臂的长度为2米; 位于多个臂中心的进入点 (104), 其中进入点 (104) 被配置为允许测试昆虫进入; 在臂的每一端设有网孔 (106), 以允许空气流动并防止测试昆虫逃逸; 宿主细胞 (108a-108n) 垂直于多个臂 (102a-102n) 的远端, 宿主细胞被配置为容纳不同类型的宿主昆虫; 传感器 (110a-110n) 配置为感知测试昆虫的进入; 以及耦合到传感器的多个LED (112a-112n), 并配置为指示测试昆虫进入宿主细胞。

来源: 印度专利

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2. Efficient methods to isolate effectors of proteins involved in olfactory or chemosensory pathways and efficient methods to use these effectors to alter organism olfaction, chemosensation, or behavior (分离参与嗅觉或化感途径蛋白质效应子以及使用这些效应子改变生物体嗅觉、化学补偿或行为的有效方法)

简介: This invention provides methods and compositions for identifying effectors, binding partners, or other molecules that interact with the proteins involved in the chemosensory pathway; examples of proteins involved in the olfactory pathway include odorant binding proteins (OBPs), sensory appendage proteins (SAPs), orthologs of the Drosophila melanogaster Takeout protein (TOLs), odorant degrading enzymes (ODEs) and odorant receptors (ORs or GPCRs). The invention identifies proteins, molecules, or chemicals that can interact with these olfactory proteins, including but not limited to agonists or antagonists of these proteins. This invention also provides methods and compositions for identifying effectors, binding partners, or other molecules that interact with the proteins involved in the chemosensory pathway; these proteins are generally similar to the olfactory proteins. Generally, the method consists of isolating gene products specifically expressed in the tissue of interest, and assaying function. This invention provides methods of use for the identified agonists and antagonists for controlling insect feeding and breeding behavior, eliminating odors, altering other behaviors, and the like.

来源: 美国专利

发布日期: 2007-01-04

全文链接: <http://agri.nais.net.cn/file1/M00/03/5E/Csgk0YIZEnaACGOuABonI07jfRs309.pdf>