

研究报告

松墨天牛对不同生理状态黑松挥发物的触角电生理和行为反应

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摘要 用水蒸气蒸馏法结合气相色谱以及气相色谱-质谱联用技术(GC-MS)分析了黑松的健康木和松材线虫危害木中的挥发性物质, 并利用触角电位和嗅觉仪测定技术比较分析了松墨天牛对黑松健康木和被害木挥发物的触角电生理和行为反应特点及其对健康木挥发物的日龄变化规律. 结果表明, 未交配天牛对健康木挥发物的EAG反应值大于被害木, 已交配天牛对被害木EAG反应值显著大于健康木; 15日龄前的EAG反应值随日龄的增加而升高. 在“Y”型嗅觉仪中, 未交配天牛对健康木挥发物表现为正趋性, 对被害木挥发物表现为负趋性; 而已交配天牛对被害木挥发物表现为正趋性, 对健康木挥发物表现为负趋性; 雌天牛随着日龄的增加对健康木挥发物的正趋性逐渐增强, 在15日龄时达到最大, 雄天牛在9日龄时正趋性最强. 说明不同发育时期的松墨天牛成虫对不同生理状态的黑松具有不同的敏感性和选择性.

关键词 [松墨天牛](#) [黑松](#) [挥发性物质](#) [触角电生理反应](#) [行为反应](#)

分类号

Electroantennogram and behavioral responses of *Monochamus alternatus* to the volatiles from *Pinus thunbergii* with different physiological status

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Abstract

The volatiles from healthy and pinewood nematode-infested branches of *Pinus thunbergii* were collected by distillation, and analyzed by using HPLC and GC-MS. Electroantennogram (EAG) and behavioral responses of *Monochamus alternatus* with different physiological status to the volatiles were investigated respectively. The results showed that unmated beetle had a greater EAG response potential to the volatiles from healthy branch than to those from infested branch, while it was reverse for mated beetle. The EAG response of unmated beetle under 15 days-old to the volatiles from healthy branch increased with its age. “Y” tube olfactory test showed unmated beetle had positive response to the volatiles from healthy branch and negative response to those from infested branch, while mated beetle showed positive response to the volatiles from infested branch and negative response to those from healthy branch. Female beetle with its age from 1 day to 15 days-old and male beetle from 1 day to 9 days-old had an increasing positive response to the volatiles from healthy branch, but the male after 9 days-old showed a negative response. It could be concluded that *M. alternatus* with different physiological status all had special sensitivity and selectivity to host tree.

Key words [Monocamus alternatus](#) [Pinus thunbergii](#) [Volatile](#) [EAG response](#) [Behavioral response](#)

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