

球孢白僵菌对桃蚜及其两种捕食性天敌的影响

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Effects of *Beauveria bassiana* on *Myzus persicae* and its two predaceous natural enemies.

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- 摘要
- 参考文献
- 相关文章

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摘要 从自然感病的温室桃蚜上分离到一株球孢白僵菌Bb21,测定了该菌株对桃蚜的致病性及其对两种捕食性天敌的影响.结果表明: Bb21菌株对桃蚜的致病力强,LD₅₀为97孢子·mm⁻²,95%置信区间为45~191孢子·mm⁻²;对草蛉2龄幼虫有较弱的致病性,LD₅₀为1089孢子·mm⁻²,是桃蚜的11.2倍;对异色瓢虫致病性极小,高浓度处理(5×10⁸孢子·mL⁻¹)的平均感染率仅为13%.该菌株低浓度处理对两种捕食性天敌的发育历期和生殖力均无显著影响,但高浓度处理(5×10⁸孢子·mL⁻¹)使异色瓢虫的幼虫期平均缩短1.4 d,羽化率降低33%,产卵量减少14%,使普通草蛉的幼虫期平均缩短0.7 d,羽化率降低24%,产卵量减少11%.该菌株对桃蚜的半致死剂量远低于对两种捕食性天敌的半致死剂量,并且在防治桃蚜使用浓度下对两种捕食性天敌成虫羽化率和繁殖力的影响极小,可作为温室桃蚜的生物控制因子在有害生物综合治理中应用.

关键词: 球孢白僵菌 桃蚜 普通草蛉 异色瓢虫

Abstract: A *Beauveria bassiana* strain Bb21 was isolated from naturally infected green peach aphid *Myzus persicae* (Hemiptera: Aphididae). The effects of the strain on *M. persicae* and its two predaceous natural enemies *Chrysoperla carnea* (Neuroptera: Chrysopidae) and *Harmonia axyridis* (Coleoptera: Coccinellidae) were investigated under laboratory conditions. Bb21 had strong pathogenicity to *M. persicae*, with the LD₅₀ of 97 conidia·mm⁻² (45-191, 95% confidence interval), but was less pathogenic to the second instar nymph of *C. carnea*, with the LD₅₀ of 1089 conidia·mm⁻². The LD₅₀ for *C. carnea* was 10.2 times higher than that for *M. persicae*. The pathogenicity of Bb21 to *H. axyridis* was very weak, with a low infection rate of 13% even at a high concentration 5×10⁸ conidia·mL⁻¹. The Bb21 at low conidia concentration had less effect on the developmental period and fecundity of the two predaceous natural enemies. However, when applied at the high concentration 5×10⁸ spores·mL⁻¹, Bb21 shortened the larval stage of *H. axyridis* averagely by 1.4 d and decreased the adult emergence rate and fecundity by 33% and 14%, respectively, and shortened the larval stage of *C. carnea* averagely by 0.7 d and decreased the adult emergence rate and fecundity by 24% and 11%, respectively. Since the LD₅₀ for green peach aphid was much lower than that for the two predaceous natural enemies, and had very low effect on the adult emergence rate and fecundity of the two predators at the concentration recommended for field spray, Bb21 could be applied as a biocontrol agent of *M. persicae* in the integrated management of pernicious organisms.

Key words: *Beauveria bassiana* *Myzus persicae* *Chrysoperla carnea* *Harmonia axyridis*

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