

## 双去甲氧基姜黄素对朱砂叶螨的生物活性及作用方式

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**Bioactivity and action modes of bisdemethoxycurcumin against *Tetranychus cinnabarinus* Bois. (Acari: Tetranychidae).**

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**摘要** 在室温 $26\text{ }^{\circ}\text{C}\pm 1\text{ }^{\circ}\text{C}$ 、湿度60%~80%、光照14 h条件下, 测定了天然植物活性成分双去甲氧基姜黄素对重要植食性害螨朱砂叶螨各螨态的触杀和熏蒸活性, 对幼螨、若螨、成螨的驱避活性, 以及对雌成螨的产卵抑制活性. 采用玻片浸渍法测得双去甲氧基姜黄素对朱砂叶螨雌成螨48 h的 $\text{LC}_{50}$ 为 $0.433\text{ mg}\cdot\text{mL}^{-1}$ . 在 $0.883\text{ mg}\cdot\text{mL}^{-1}$  ( $\text{LC}_{70}$ ) 的浓度下, 双去甲氧基姜黄素对朱砂叶螨不同螨态触杀活性的大小依次为幼螨>若螨>成螨>卵, 其中对幼螨24 h和48 h的校正死亡率分别为60.0%和83.3%; 对朱砂叶螨各螨态的熏蒸作用不明显, 24 h和48 h的校正死亡率均小于3%; 对幼螨、若螨以及成螨均表现出较强的驱避作用, 其中对幼螨的效果最好, 不同处理时间的驱避率均在85%以上, 其次是若螨, 对成螨的驱避性相对较差, 72 h的驱避率仅为47.8%. 同时对雌成螨有明显的产卵抑制作用, 处理后120 h产卵抑制率达到89.3%. 表明双去甲氧基姜黄素对朱砂叶螨的主要作用方式为触杀、驱避和产卵抑制作用.

**关键词:** 双去甲氧基姜黄素 朱砂叶螨 触杀 熏蒸 产卵抑制 驱避

**Abstract:** This paper determined the contact-killing and fumigant activities of natural plant product bisdemethoxycurcumin (BDMC) on the important phytophagous mite *Tetranychus cinnabarinus* (Acari: Tetranychidae) at its different life stages, and studied the repellency effects of BDMC on the mite larvae, nymphs, and adults, and the inhibition efficiency of BDMC on the female mite oviposition under the conditions of  $26\text{ }^{\circ}\text{C}\pm 1\text{ }^{\circ}\text{C}$ , 60%-80% RH, and light cycle 14L:10D h. The median lethal concentration ( $\text{LC}_{50}$ ) of BDMC at 48 h against female adults determined by slide-dip method was  $0.433\text{ mg}\cdot\text{mL}^{-1}$ . At concentration  $0.883\text{ mg}\cdot\text{mL}^{-1}$  ( $\text{LC}_{70}$ ), the contact-killing activity of BDMC against different life stage *T. cinnabarinus* was in the order of larva > nymph > adult > egg, and the corrected mortality of larvae at 24 h and 48 h was 60.0% and 83.3%, respectively. BDMC had no obvious fumigant activity against different life stage *T. cinnabarinus*, and the corrected mortality was all less than 3% after treatment 24 h and 48 h. BDMC had stronger repellency activity against the mite, with the repellency rate against larvae at different treatment times all above 85%, followed by against nymphs, and that against adults after 72 h being only 47.8%. BDMC had obvious oviposition inhibition activity against female adults, with the inhibition rate after 120 h reached 89.3%. All the results suggested that the main action modes of BDMC against *T. cinnabarinus* were contact-killing, repellency, and oviposition inhibition.

**Key words:** bisdemethoxycurcumin *Tetranychus cinnabarinus* contact-killing fumigant oviposition inhibition repellency

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