

【論文】

Antifungal activity of 1-phenyl-3-pentanone produced by *Mycoleptodonoides aitchisonii* against plant-pathogenic fungi

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[Abstract]

1-Phenyl-3-pentanone, a volatile compound produced by the edible mushroom *Mycoleptodonoides aitchisonii* (“Bunaharitake” in Japanese) has antifungal activity against plant-pathogenic fungi. To determine its antifungal spectrum and effective concentration, we investigated the effects of 1-phenyl-3-pentanone on mycelial growth and spore germination of several plant-pathogenic fungi; *Alternaria alternata* Japanese pear pathotype, *A. brassicicola*, *Bipolaris sorokiniana*, *Botrytis cinerea*, *Cladosporium cucumerinum*, *Colletotrichum orbiculare*, *Corynespora cassiicola*, *Magnaporthe oryzae*, and *Pasalora fulva*. The compound inhibited significantly mycelial growth and spore germination of all pathogens tested at concentrations of 5-10 ppm (w/v) as vapor. When the compound was removed from spores of the pathogens, the spores began to germinate indicating the fungistatic activity of the compound. Lesion formation on detached leaves of cabbage and tomato inoculated with spores of *A. brassicicola* and *C. cassiicola*, respectively, was also significantly inhibited at 5-10 ppm. The compound did not cause injury at the concentrations used on either of the detached leaves. Since 1-phenyl-3-pentanone is a nontoxic product of an edible mushroom and has fungistatic activity against broad fungal pathogens, it may have great potential as a safe agent for controlling fungal diseases.

Key words: Antifungal activity, *Mycoleptodonoides aitchisonii*, 1-Phenyl-3-pentanone, Plant-pathogenic fungi, Volatile compound

[摘要]

食用きのこのブナハリタケは植物病原糸状菌に抗菌活性を示す揮発性物質の1-phenyl-3-pentanone (PP) を生産する。PPの抗菌スペクトラムおよび有効濃度を明らかにするため、植物病原糸状菌の *Alternaria alternata* Japanese pear pathotype, *A. brassicicola*, *Bipolaris sorokiniana*, *Botrytis cinerea*, *Cladosporium cucumerinum*, *Colletotrichum orbiculare*, *Corynespora cassiicola*, *Magnaporthe oryzae* および *Pasalora fulva* に対する活性を調べた。PPは気中濃度が5-10 ppm (w/v) で供試したすべての病原糸状菌の菌糸生育と孢子発芽を抑制した。また、発芽が抑制された孢子からPPを除去すると孢子は発芽を開始し、PPの抗菌作用は静菌的であった。一方、孢子接種した切取り葉にPPを処理すると5-10 ppm (w/v) で病斑形成が抑制された。なお、本濃度のPP処理では切取り葉に傷害はみられなかった。以上の結果から、PPは病原糸状菌によって引き起こされる各種病害の安全な防除資材となる可能性が示唆された。