

【論文】

シイタケ黒色斑点病菌による宿主特異的褐変誘導物質の生産

渡邊莉菜・有馬二郎・尾谷 浩・前川二太郎・岡久美子*

鳥取大学農学部 〒680-8553 鳥取県鳥取市湖山町南4丁目101番地

Production of host-specific browning-inducing substances by *Eleutheromyces subulatus* causing black spot disease of shiitake mushroom

Marina WATANABE, Jiro ARIMA, Hiroshi OTANI, Nitaro MAEKAWA and Kumiko OKA*

Faculty of Agriculture, Tottori University, 4-101 Koyama-Minami, Tottori, 680-8553, Japan

(Received 9 September 2014 / Accepted 14 October 2014)

[Abstract]

The *Hyphozyma* synanamorph of *Eleutheromyces subulatus* causes black spot disease of the shiitake (*Lentinula edodes*) fruiting body. Characteristic symptoms are the blackening and superficial lysis of infected pileus surface tissues. As a result of examining pathogenicity of the *Hyphozyma* synanamorph toward shiitake and other cultivated mushrooms, inoculation with yeastlike cells of the *Hyphozyma* synanamorph caused browning lesions only on shiitake, but not on other cultivated mushrooms. The culture filtrate of the yeastlike cells also caused browning lesions only on shiitake. These results suggest that the *Hyphozyma* synanamorph produces host-specific substances that cause browning lesions only on shiitake. Therefore, isolation of browning-inducing substances from culture filtrate of the *Hyphozyma* synanamorph was attempted. The browning-inducing activity was detected in a high molecular weight fraction (>10 kDa) and was inactivated by treatment with 40°C for 30 minutes. Following SDS-PAGE of the fraction, 15-16 kDa and 37 kDa bands were detected and the sequence of the same 15 N-terminal amino acids was determined. Because a protein homology search by BLAST did not identify any significant homology, these were inferred to be unknown proteins. This is the first report to show that the mushroom pathogenic fungus produces browning-inducing substances with host-specific activity.

Key words: Browning-inducing substances, Host specificity, *Hyphozyma* synanamorph of *Eleutheromyces subulatus*, Mushroom disease, Shiitake

[摘要]

シイタケ黒色斑点病は*Eleutheromyces subulatus*の*Hyphozyma*シニアナモルフによって引き起こされる。本研究では、黒色斑点病菌の各栽培食用きのこ種に対する病原性を検定するとともに、本菌が生産する初期病徴の発現に関与する物質の探索を試みた。各きのこ種の子実体縦断面や培養菌糸体に本菌の酵母状細胞懸濁液を滴下接種すると、シイタケにのみ褐変の病徴がみられ、本菌の病原性には明確な宿主範囲のあることが明らかになった。また、本菌の培養ろ液を各きのこ種の子実体断面に滴下処理すると、シイタケにのみ病原菌接種と同様な褐変が誘起され、培養ろ液中に宿主特異性を示す褐変誘導物質の存在が示唆された。培養ろ液より本物質の単離・同定を行ったところ、本物質は未知タンパク質である可能性が示された。本研究はきのこの病原菌が宿主特異的な褐変誘導物質を生産することを示した初めての報告である。