【論文】

Inhibition of browning and catecholase activity of *Pholiota microspora* under low temperature conditions

Ken-ichiro MINATO[1)*], Rie ISOSHIMA[1)], Chizuru ABE[2)] and Akihiro OHARA[1, 3)]

[1)] Department of Applied Biological Chemistry, Meijo University, Nagoya 468-8502, Japan

[2)] School of Food, Agricultural, and Environmental Sciences, Miyagi University, Sendai 982-0215, Japan

[3)] Graduate School of Agriculture, Meijo University, Nagoya 468-8502, Japan

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[Abstract]

The mushroom *Pholiota microspora* exhibited browning and decreased fresh weight by the second day of storage at room temperature (25℃). It was suggested that polyphenol oxidase (PPO), which is an index of browning in many edible mushrooms, played a role in the decline in *P. microspora* quality during storage. In this study, oxidase activity was assessed using L-tyrosine, L-DOPA, and catechol as substrates. It was shown that PPO activity for catechol as a diphenol increased rapidly in *P. microspora* during storage at 25℃. In contrast, the fruiting body stored at low temperature (5℃) maintained its freshness for more than one week. Also, the PPO showed minimal activity against substrates during storage at 5℃. These results suggested that a diphenol oxidase such as catecholase was increased predominantly in the mushrooms, negatively impacting product quality during storage. Further, low temperature storage effectively inhibited catecholase activity associated with the browning of edible mushrooms.

Key words: Browning, Catecholase, Edible mushroom, *Pholiota microspora*, Polyphenol oxidase

［摘　要］

食用きのこであるナメコ（*Pholiota microspora*）を収穫後 25℃で貯蔵すると，2 日目には新鮮重の減少および褐変が認められた．これらの貯蔵中における品質低下には，多くの食用きのこにおいて褐変化の指標であるポリフェノールオキシダーゼ活性が関与していた．本実験において本酵素活性を測定するために，L-チロシン，L-DOPA，カテコールを基質として使用した．その結果，25℃貯蔵ナメコ由来粗酵素は，ジフェノールであるカテコールの酸化反応を顕著に触媒した．一方，5℃貯蔵においてはナメコ新鮮重の減少および褐変はみられず，ポリフェノールオキシダーゼ活性もほとんど認められなかった．これらの結果より，食用きのこの貯蔵中の品質低下とされる褐変には，ジフェノールオキシダーゼ（カテコラーゼ）活性の関与が示唆された．さらに低温による貯蔵が，カテコラーゼ活性および褐変を抑制してナメコの品質保持に有効であることが示唆された．