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The Effects of Antiseptics on the Protein Metabolism of Plasma Membrane in the Various Fungal Cells

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Plasma membrane from the fungal cells (*A. phoenicis, R. acidus, C. albicans*) treated with sodium benzoate (S.B), potassium sorbate (P.S) and calcium propionate (C.P) during the cultivation were separated. The contents and patterns of plasma membrane proteins compared with thats of the control. The growth of *A. phoenicis* was decreased by the average 64% in the S.B treatment. That of *R. acidus* was inhibited by the average 69% in the P.S treatment. Also, that of *C. albicans* showed the deminution of the average 59.5% in the S.B treatment. The contents of protein involved in the plasma membrane of the each fungal cells were inhibited the average 41.0%, 41.7% and 59.5 % in the S.B treatment, respectively. The pattern changes in the protein contained the plasma membrane in the cells treated in the various antiseptics during the cultivations analyzed with SDS-polyacrylamide gel electrophoresis method. In *A. phoenicis*, the treatment showed the aspect similar to the control on the 1st day and 2nd day of cultivation, but 116KD - 97KD band almost disappeared in the 5th day of cultivation, and 45KD - 29KD band was uncleared through the cultivation. S.B treatment group in *R. acidus* showed the loss of 116KD - 97 KD band from the middle stage of cultivation and P.S, C.P treatment were started the loss of early stage and completely lost at the 36hours of cultivation. In *C. albicans*, 116KD - 97KD band were started loss of early stage to compare with the control and 66KD - 45KD band were dimmed at the 96 hours of cultivation. Especially, the C.P treatment were perfectly lost at the 96hours of cultivation. The significant change was at 116kd - 97KD band.

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Cloning of Calmodulin from *Pleurotus ostrestus* and Studies on the Effectors on the Development of *Pleurotus ostreatus*

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Complete cDNA and genomic clones for unique calmodulin (CaM) gene of the *Pleurotus ostreatus* have been isolated and characterized. The gene (CaM) is a unique, single-copy locus, contains seven introns and transcribed as a single mRNA species. The predicted amino acid sequence of *Pleurotus ostreatus* calmodulin shares 92% identity with vertebrate calmodulins. Recombinant calmodulin was expressed using a IPTG-controlled T7 promoter in *E. coli*. The expressed protein was purified from bacterial lysates by heat treatment and phenyl-agarose column chromatography. Purified protein was used for the preparation of calmodulin-agarose affinity gel. Different calmodulin-binding proteins were expressed during differentiation stages of *Pleurotus ostreatus*, which was revealed by calmodulin-agarose chromatography.

By addition of modulators of calcium and calmodulin and cAMP to the media, it could be postulated that vegetative aerial mycelial growth and fruit body formation was regulated by calcium, calmodulin and cAMP in a complex and interrelated signal transduction pathway. But the fact that vegetative aerial mycelial growth and fruit body formation was differently affected by these modulators, suggesting different signalling pathways are involved in the growth and differentiation.