MfLIP1, a gene encoding an extracellular lipase of the lipid-dependent fungus *Malassezia furfur*.

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Abstract

Malassezia furfur is a dimorphic fungus and a member of the normal cutaneous microflora of humans. However, it is also a facultative pathogen, associated with a wide range of skin diseases. One unusual feature of M. furfur is an absolute dependency on externally provided lipids which the fungus hydrolyses by lipolytic activity to release fatty acids necessary for both growth and pathogenicity. In this study, the cloning and characterization of the first gene encoding a secreted lipase of M. furfur possibly associated with this activity are reported. The gene, MfLIP1, shows high sequence similarity to other known extracellular lipases, but is not a member of a lipase gene family in M. furfur. MfLIP1 consists of 1464 bp, encoding a protein with a molecular mass of 54.3 kDa, a conserved lipase motif and an N-terminal signal peptide of 26 aa. By using a genomic library, two other genes were identified flanking MfLIP1, one of them encoding a putative secreted catalase, the other a putative amine oxidase. The cDNA of MfLIP1 was expressed in Pichia pastoris and the biochemical properties of the recombinant lipase were analysed. MfLip1 is most active at 40 degrees C and the pH optimum was found to be 5.8. The lipase hydrolysed lipids, such as Tweens, frequently used as the source of fatty acids in M. furfur media, and had minor

esterase activity. Furthermore, the lipase is inhibited by different bivalent metal ions. This is the first molecular description of a secreted lipase from M. furfur.

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