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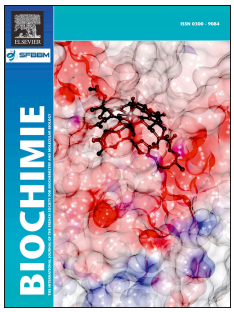

Secretory lipase from the human pathogen *Leishmania major:* Heterologous expression in the yeast *Pichia pastoris* and biochemical characterization

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Abstract

Leishmaniasis is a parasitic reticuloendotheliosis whose pathogen is a zooflagellate belonging to the genus *Leishmania* transmitted by the bite of an infected phlebotome. Recently, a unique secretory lipase from the human pathogen *Leishmania donovani* Ldlip3 has been identified and characterized. This lipase has a high identity with a putative triacylglycerol lipase of *Leishmania major* (Lmlip2). In the present study, Lmlip2 was expressed in the eukaryotic heterologous expression system *Pichia pastoris* as tagged enzyme of 308 amino acids. Maximal protein production was reached after 2 days of fermentation. Optimal Lmlip2 lipase activity was measured using the pH stat technique at pH 8 at 26°C using vinyl esters and triacylglycerols (true lipids) as substrates. Moreover, biochemical characterization of Lmlip2 contained in culture supernatant, illustrates that *L. major* secreted lipase is active and stable at low temperatures especially 26°and prefer neutral pH; concerning substrate specificityLmlip2 presents a preference for short chains lipid substrates vinyl esters such as VC2, VC3 and VC4 likewise, it is capable to hydrolyze long chain triacylglycerols like olive oil. Metal ions and surfactants tested in this study decrease Lmlip2 activity. Further studies are needed to clarify the relation between the lipase activity and the virulence. Thus, it could lead to the identification of novel targets to block cutaneous Leishmaniasis in human hosts.