

Lipidomics of Dermatophytes and its Relevance to Dermatophytic Infections

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Dermatophytes are responsible for the vast majority of superficial mycoses. Dermatophytes are highly specialised filamentous fungi that only infect keratinized host structures. These structures include the stratum corneum of the skin, hair, and nails. Dermatophytes can only thrive on the cornified outer layers of the skin. The natural infection caused by these dermatophytes is acquired when live arthrospores or hyphae are deposited on the surface of a susceptible individual. Under appropriate conditions, infection can lead to adhesion and penetration of the host. In numerous dermatophytic species, for our study we mainly focused on *Trichophyton* species, that shares the more frequent and major infection rate among all. Several researches have been established the role of different lipids in the survival growth and more importantly in the pathogenicity of fungi. Heading this approach in our work, lipid profiling of *Trichophyton* species is documented and what are the lipids are involved in the virulence and the changes against drug responses is studied. From the lipid extraction data of *Trichophyton* species, it is observed that Triacylglycerol, abbreviated as TG, is the primary component of neutral lipid. Other neutral lipid components, including monoacylglycerol (MG), diacylglycerol, sterols, and sterol esters, were found, although in much less concentrations. Phosphatidylcholine (PC), phosphatidylethanolamine, phosphatidylserine, phosphatidylinositol, phosphatidylglycerol, and a few other less common lipids are the primary phospholipids. Other phospholipids include several odd lipids. The majority of the neutral lipids found in dermatophytes are composed of TG, whereas only trace amounts were found to contain MG, diacylglycerol, sterols, and sterol esters. In addition to lipid profiling, their involvement in pathogenicity was also investigated, and the fact that considerable alterations have been observed in the lipid profile demonstrates they play significant role in the virulence of *Trichophyton* species.