

Title: THE GENE FATTY ACID ACETYL TRANSFERASE (FAC) OF *TRICHOPHYTON RUBRUM* IS INVOLVED IN THE ABILITY TO INFECT HUMAN NAILS AND IN THE SUSCEPTIBILITY TO *TRANS*-CHALCONE

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Trichophyton rubrum is a cosmopolitan filamentous fungus that can infect human keratinized tissue (skin, nails and hair) and is the major agent of all chronic and recurrent dermatophytoses. Although the clinic importance of infections promoted by *T. rubrum*, there are few antifungals on the market and their targets are limited because of cell similarities shared between fungi and mammalian cells. In this context, trans-chalcone is a flavonoid that shows antifungal activity against *T. rubrum*, by inhibition of fatty acid synthase (FAS), that presents marked differences between fungal and mammalian cells. The enzyme acetyl transferase (FAC) is the principal enzyme of FAS multienzymatic complex and initiates the synthesis of fatty acid of cell membrane. Results from microarray using customized slides of *T. rubrum* cultivated in minimal medium added keratin in presence of *trans*-chalcone showed repression of the fatty acid acetyl transferase (FAC) gene. The aim of this work was to construct a FAC null mutant in *T. rubrum* (Δ Tru FAC) in order to study the involvement of this gene in trans-chalcone susceptibility. The mutant was obtained through genetic disruption and antifungal susceptibility was performed using the microdilution assay. The Δ Tru FAC strain showed an increased growth rate when cultivated with fatty acids, was more resistant to trans-chalcone exposure, and showed a decrease in ability to grow in nail fragments in comparison to wild strain (CBS 118892). Therefore, the results show the role of FAC gene in virulence and strengthen the previous evidence about antifungal activity of *trans*-chalcone toward *T. rubrum* acting on fatty acid synthesis.

Key words: fatty acid acetyl transferase, fatty acid synthase, infection, *T. rubrum*, *trans*-chalcone,

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