

Dermatophytes are keratinophilic and keratinolytic fungi responsible for infections of skin and its products such as hair and nails. Among this group of fungi three genera *Trichophyton*, *Microsporum* and *Epidermophyton* are identified which contain species pathogenic for human and animals. Dermatophyte infections pose a significant dermatological and epidemiological problem. Contemporary conditions of life increase probability of the occurrence of conditions which are favorable for the development of such infections. This finds confirmation by the increasing number of fungal infections, including dermatophytoses within last years. Dermatophyte infections are reported not only in particular age groups, such as children and elderly people, but also in social and professional ones. Because of that, skin infections caused by dermatophytes are currently recognized as diseases of civilization which pose a serious problem in public health. Knowledge about genes and molecular mechanisms responsible for pathogenicity, as well as other biological properties of the dermatophytes is still relatively poor therefore, proteomic analysis, with other methods of global analysis of gene expression, play an important role in understanding the mechanisms of pathogenesis.

The dermatophytes infection process is initiated through the release of adhesins, which bind to the host stratum corneum. After adhesion, arthroconidia begin to germinate, leading to the formation of fungal hyphae that invade keratinized skin structures. During the germination of spores and forming hyphae, a numerous re-arrangements of proteins exposed on the surface of the cell-wall are observed, as a result of the fungus respond to various external environment factors or interaction with the host cell during infection. The inner part of fungal cell walls consisting mainly of β -1,3-glucans, that forms a strong but flexible connection. Cell-wall proteins (CWPs) are linked to the wall through different types of bonds, however most of them are glycosylphosphatidylinositol (GPI)-modified and are thus indirectly linked to the β -1,3-glucans. It is known that the cell wall components are involved in direct contact with the tissues of the host during infection, therefore, may be one of the major virulence factors of this group of pathogenic fungi.

We are very interesting to study the profile of different protein fractions of dermatophytes, with particular emphasis of cell-wall proteins, in culture media which promote adhesion-inducing conditions, under optimal pH for their growth, what in our opinion, allows to define the role of identified proteins and their possible involvement in cellular processes associated with the pathogenicity of this group of pathogenic fungi. To our best knowledge, it will be the first such comprehensive analysis of transcriptome and proteome of dermatophytes, with particular emphasis on their cell wall proteins.