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Onychomycosis due to nondermatophytic molds: Prevalence, risk factors and essential oils for nail molds

Ali Reza Khosravi[1], **Zahra Safarian**[2] and **Hojat Shokri**[3]
[1]*University of Tehran, Iran*
[2]*Tehran University of Medical Sciences, Iran*
[3]*Tehran University of Medical Sciences, Iran*

Onychomycosis is a fungal infection affecting finger and toe nails mainly caused by dermatophytic and nondermatophytic fungi. Interest in medicinal and aromatic plants as a source of antimicrobial drugs has emerged, mainly due to increased resistance of infectious agents. The aims of this study were to evaluate the prevalence and factors influencing the presence of onychomycosis in immunocompromised patients as well as to assess the antifungal activity of seven herbal essential oils against pathogenic nondermatophytic molds. During the period of 4 years (2013-2017), 379 patients suspected with onychomycosis were assessed for the presence of onychomycosis with mycological examination based on conventional techniques. The antifungal activity was performed based on the Clinical and Laboratory Standards Institute (CLSI), M38-A protocol for filamentous fungi. Among 379 subjects, onychomycosis due to molds was diagnosed in 145 cases (83 males and 62 females, aged 20-≥60 years). Patients with age varying from 40 to 49 years old were more affected. Ratio of toenail to fingernail infection was 1.3:1. Fusarium spp., *Scopulariopsis brevicaulis* and Aspergillus spp. were the most frequently isolated, being responsible for 86.2% of cases. About 40% of patients had risk factors, such as depression, human immunodeficiency virus (HIV) positive, breast cancer, rheumatoid arthritis, renal transplantation, systemic lupus erythematosus, congestive heart failure and cerebral infarction. All tested molds were sensitive to the essential oils, ranging from 20 to 530 µg/ml. *Zataria multiflora oil* was the most effective among the essential oils. These results confirm the inhibitory potential of essential oils against the important dermatological molds.

khosravi@ut.ac.ir