

ABSTRACT

Submitted diploma thesis deals with laboratory diagnostics of filamentous micromycetes (moulds) genus *Fusarium* in the laboratories of medical mycology. In the first part of the diploma thesis is dedicated space for general familiarization with filamentous microscopic fungi. Next separate chapter describes the genus *Fusarium*, especially in relation to human medicine. The final part of the diploma thesis summarizes current possibilities of laboratory diagnostics of filamentous micromycetes, focusing on the genus *Fusarium*.

Invasive infections caused by filamentous fungi are increasingly common complication, especially in immunocompromised patients. In most cases they affect the patients with hematologic malignancy and patients after hematopoietic stem cell transplantation or solid organ transplantation. The most common etiological agent of such infections is unambiguously the *Aspergillus* genus. However, in recent years, increasingly cases of infections due to less common filamentous fungi, including *Fusarium* spp. are described. Invasive fungal infections are associated with very high mortality. The basic requirement thus becomes the speed and accuracy of diagnosis.

The most important methods for the laboratory diagnostics of invasive infections caused by filamentous fungi are conventional methods – microscopy, cultivation and histological examination. However, these procedures are time consuming and often exhibit limited sensitivity and/or specificity. It is possible to have detection causative agent only at later stages of the disease, which can lead to false negative results. For these reasons, new techniques are being promoted in mycology (serologic and molecular-biology methods), which can help to increase the sensitivity and speed of diagnostic of invasive fungal infections.

Keywords: moulds, genus *Fusarium*, laboratory diagnostics