

Abstract

A microscopic fungus *Pseudogymnoascus destructans* (Ascomycota: Pseudeurotiaceae) causes illness known as white-nose syndrome (WNS) causing death of bats during hibernation. The illness occurs in the North America and in Europe. The fungus is characteristic by asymmetrically curved conidia, by slow growth and growth at low temperatures (below 20 °C).

The aim of this study is to clarify properties responsible for unique ecology of *Pseudogymnoascus destructans* by comparison with ecological related or unrelated pathogenic or nonpathogenic fungi. This part includes study of tolerance to physiological stresses and recognition of spectrum of utilizing nutrients (compounds of carbon, nitrogen, phosphorus, sulphur and nutrient supplements). Testing to physiological stresses should help to estimate a potentiality of fungus to spread out of caves. The last aim is to develop a selective isolation medium for *P. destructans*.

Influence of several types of physiological stress (e.g. UVA, UVA with UVB, 25 °C, 30 °C, 37 °C and dryness) was investigated with fluorescent stain propidium iodide (PI) by flow cytometry. The spores of *Pseudogymnoascus destructans* and three fungi from underground spaces were not viable after 3 weeks at 37 °C. Other stresses did not cause a decreasing of viability or some stresses caused a decreasing of viability only in some strains of fungi.

The development of the selective isolation medium for *P. destructans* had several steps (e.g. finding a control medium, finding suitable cultivation temperature, testing antimycotics etc.). The selective medium was also developed through Biolog MicroPlate for testing of utilization carbon, nitrogen, phosphorus, sulphur and nutrient supplements. System Biolog showed, that isolates of *Pseudogymnoascus destructans* differ in utilization of sources of carbon, nitrogen, phosphorus, sulphur and nutrient supplements from other testing fungi.

Key words: Fungi, *Pseudogymnoascus*, physiology, utilization, viability