

## Natural Habitat of *Aureobasidium pullulans* in Sari, Iran

Mehdi Taheri Sarvtin<sup>1,\*</sup>; Ali Asghar Alamian<sup>2</sup>

<sup>1</sup>Department of Medical Mycology and Parasitology, School of Medicine, Jiroft University of Medical Sciences, Jiroft, IR Iran

<sup>2</sup>Department of Medical Mycology and Parasitology, School of Medicine, Mazandaran University of Medical Sciences, Sari, IR Iran

\*Corresponding author: Mehdi Taheri Sarvtin, Department of Medical Mycology and Parasitology, School of Medicine, Jiroft University of Medical Sciences, Jiroft, IR Iran. Tel: +98-9132489448, Fax: +98-3482318084, E-mail: mehditaheri.mt@gmail.com

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*Aureobasidium pullulans* is a potentially pathogenic black yeast-like and halotolerant fungus causing ever-increasing diseases (1), such as infections, pulmonary problems, especially allergy due to respiratory irritation mediated by cell-wall components (e.g. glycoproteins, beta-glucans) in patients with respiratory diseases, children, old people, and immune-compromised patients (2, 3). The occurrence of *A. pullulans* has been mostly reported in temperate climates (4). However, it has been also found in Denmark, Canada, Germany, Alaska, Antarctica, the Netherlands, Austria, Poland, Czechoslovakia, and Russia (4). In various studies, soil, air, woods and wood products have been reported as habitats of *A. pullulans* (5-7).

Sari is a major city in north of Iran with humid and temperate climate. So, in this study, the presence of *A. pullulans* was examined in soil, air, wood, and wood products used inside of the buildings in Sari City. This investigation was carried out from September 2013 to March 2014 in the department of medical mycology, school of medicine, Mazandaran University of Medical Sciences, Sari, Iran. The airborne fungal spores in indoor and outdoor of 17 houses were collected by sedimentation method. At the same time, 34 Petri dishes, 90 mm in diameter, containing Malt Extract Agar (MEA) (Merck, Germany) were opened and exposed to air about 1 m above the ground in different parts of the houses (Kitchen, living room, bedroom). Seventeen petri dishes were opened and exposed to air of outdoor around the houses. The fungal spores from wood and wood products were collected by scalpel and cultured on MEA medium. The soil fungal spores were isolated according to the procedure of Chowdhary et al. (8). All petri dishes were transferred to the laboratory and incubated at 25°C for 6 days. Fungal isolates were identified by conventional methods, including the gross morphology of the fungal colony and slide culture for microscopic characterization. *Aureobasidium pullulans* has smooth, blackish-brown thallus, covered with a slimy

mass of pale brown spores becoming darker with the apposition of black filament. This fungus has undifferentiated conidiophores (or with short lateral branches) (4). Identification of all *A. pullulans* isolates were confirmed based on sequencing the D1/D2 domain of the 26S ribosomal RNA gene (9).

In Pitkaranta et al. (5), Cooke (6), and Horvath et al. (7) studies, *A. pullulans* was isolated from indoor air, soil, and wood products, respectively. In the present study, *A. pullulans* was only isolated from the wood and wood products. This difference may be due to variations in geographical region and diagnostic techniques. Wood is a biological material consisting of cellulose, lignin, and hemicellulose that in adequate moisture, *A. pullulans* can easily grow on and degrade the wood via its enzymes including: cellulose, pectinesterase, pectin transeliminase, pectinase, polygalacturonase, polymethylgalacturonase, xylanase and L-rhamnose dehydrogenase (4, 7, 10). Penetration of this fungus can be rapid and growth over a 24 hour period has been measured as 1 mm radially, 0.5 mm tangentially, and 5.0 mm longitudinally (4).

In conclusion, wood and wood products are the only found natural habitat for *A. pullulans* in Sari, north Iran. Therefore, less use of wood and wood products in houses of sensitive individuals is recommended. Staining of the wood and moisture control methods used to inhibit wood decay fungi will also eliminate conditions favorable for the growth of *A. pullulans*.

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