UNIVERSITI TEKNOLOGI MARA

CHARACTERIZATION OF AIRBORNE FUNGI ISOLATED FROM FACULTY OF DENTISTRY IN UITM SUNGAI BULOH

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Thesis submitted in fulfillment of the requirement for
the degree of
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DECLARATION BY STUDENT

Project entitled "Characterization of Airborne Fungi Isolated from Faculty of Dentistry in UiTM Sungai Buloh" is a presentation of my original research work. Whenever contributions of others are involved, every effort is made to indicate this clearly, with due reference to literature, and acknowledgement of collaborative research and discussions. The project was done under the guidance of Project Supervisors, Madam Hartini Yusof and Dr. Nurul 'Izzah Mohd Sarmin. It has been submitted to the Faculty of Health Sciences in partial fulfillment of the requirements for the Degree of Bachelor of Medical Laboratory Technology (Hons.).

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ABSTRACT

Indoor airborne fungi has been recognized as contributor to irritative disorders, primarily non-infective diseases such as allergy and asthma. Spores and hyphal fragments of fungi contained in bioaerosols can be breathed in easily and evoke bronchial irritation and allergy and in immunocompromised individuals, fungi can cause opportunistic infections. Therefore, the present study was undertaken to characterize the airborne fungi that have been isolated from the environments of Faculty of Dentistry in UiTM Sungai Buloh campus by their macromorphology, micromorphology and also molecular characteristics. Fungi that were previously kept in 20% glycerol stock were cultured back on Sabouraud dextrose agar (SDA) and were observed for their macromorphological and micromorphological characteristics. DNA was then extracted and the internal transcribed spacer regions (ITS1-5.8S-ITS2) was amplified using forward primer ITS1, 5'-TCC GTA GGT GAA CCT GCG G-3' and reverse primer ITS4, 5'-TCC TCC GCT TAT TGA TAT GC-3'. The amplified products were detected on 1% agarose gel, viewed using a gel documentation system, ImageQuant LAS500, sent for sequencing and results were analyzed using the National Center for Biotechnology Information (NCBI) database. The macromorphology of the fungal isolates were successfully observed based on colour, texture and form while the micromorphology were looked for morphological structures such as phialides and metulae. The nucleotide sequence results received were run through Basic Local Alignment Search Tool (BLAST) and one of the airborne fungi that were isolated was detected as *Penicillium citrinum* with 99% sequence similarity. In conclusion, a combination of macromorphological, micromorphological and molecular characteristics is useful for characterization of airborne fungi.

Keywords: Airborne fungi, Characterization, Molecular, ITS, PCR