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ALLERGENIC POTENTIAL AND CROSS-REACTIVITY OF FUNGAL SPECIES ISOLATED FROM THE INDOOR ENVIRONMENT

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Abstract
Indoor fungi are potential sensitizing agents. Their detection and quantification in indoor environments are important in the diagnosis and environmental management of fungal allergies. This study aims to analyse the allergenic potential of ten fungal species and the cross-reactivity of the two most common fungi isolated from the indoor environment samples from Sultan Idris Education University buildings. Employing in vivo (skin prick test) and in vitro (immunoblotting), the major and minor allergenic proteins of ten fungi sensitized subjects were identified. Aspergillus fumigatus and Penicillium canescens were the most common fungi with the highest potential to trigger allergies. The cross-reactivity between them was detected by immunoblotting inhibition experiments using three selected sera from subjects sensitized to each of the aforementioned species. The immunoblotting test revealed multiple major and minor allergens. Among them were 11, 25, 33, 36 > 100 kDa and were also listed as causative agent triggering allergy by IUIS Allergen Nomenclature Subcommittee. Cross-reactivity of Aspergillus fumigatus against Penicillium canescens revealed that 9(64.29%) allergenic bands and 13(76.47%) allergenic bands were inhibited, respectively. Aspergillus spp. and Penicillium spp. with high cross-reactivity are most prevalent in the indoor environment of identified contaminated buildings at UPSI. Aspergillus fumigatus and Penicillium canescens can elicit sensitization among the atopic population and implicates worsening the condition of the symptomatic subjects with prolonged these fungal exposures.

Author Keywords
cross-reactivity; Fungi; indoor environment; potential allergenic agent; sensitisation

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