

Editorial

The silent threat: A one health approach for emerging fungal pathogens in Sri Lanka

Fungal infections are silent killers whose annual mortality has exceeded that of tuberculosis and malaria combined. Globally, awareness of fungal diseases among healthcare professionals remains disproportionately low, and rapid diagnostic tools required for prompt identification are still in development. The antifungal armamentarium is severely limited, while novel agents remain prohibitively expensive. Recognising this growing threat, the World Health Organisation published its Fungal Priority Pathogens List, classifying *Candida auris*, *Candida albicans*, *Cryptococcus neoformans*, and *Aspergillus fumigatus* as critical priority pathogens.¹

Candida auris is a thermotolerant and halotolerant yeast that emerged simultaneously across five distinct geographical clades worldwide.² It has been hypothesised that global climate change selected for this thermotolerant pathogen from less thermotolerant ancestral species inhabiting saline environments. The isolation of less resistant, less thermotolerant strains from undisturbed marshlands provides compelling support for this hypothesis. Transmission from the environment via avian vectors has also been postulated, although the organism is yet to be isolated from animal hosts. Notably, *C. auris* has been isolated from the surfaces of stored apples, whereas it was absent on freshly harvested fruit. The extensive application of antifungal agents during agricultural storage likely exerts selective pressure favouring resistant strains, facilitating subsequent transmission to humans. The recent emergence of this multidrug-resistant yeast, associated with mortality rates approaching 60%, serves as a stark illustration of the intricate interconnections among humans, animals, and the environment in driving the evolution of lethal pathogens. In Sri Lanka, molecular identification of routine fungal isolates has only recently commenced, with diagnostic capacity restricted to the National Reference Laboratory. Expanding diagnostic services across the island is therefore a pressing priority. Furthermore, studies investigating the environmental evolution of fungal pathogens in Sri Lanka are virtually non-existent, largely due to severe constraints in securing research funding.

Aspergillus fumigatus is a ubiquitous saprophytic mould responsible for a spectrum of respiratory infections and allergic syndromes in humans. The emergence of triazole resistance in antifungal-naïve patients presents a major clinical challenge. Identical resistance genotypes have been recovered from both clinical and environmental isolates, confirming an environmental origin.³

Fungi cause substantial economic losses in agriculture, prompting widespread fungicide application across farming sectors. Historical disasters, such as the Irish potato famine caused by potato blight, illustrate the agricultural necessity of crop protection. However, the fungicides used in agriculture share structural similarities with clinical triazoles used in human medicine. Consequently, environmental exposure drives cross-resistance in saprophytic fungi, which subsequently infect human hosts. Regrettably, epidemiological data regarding pulmonary aspergillosis in Sri Lanka remain scarce. Antifungal susceptibility testing in Sri Lanka is still in its infancy and is not routinely offered, despite documented reports of azole resistance in *Aspergillus*. Moreover, the prevalence of resistant environmental strains has never been evaluated in the Sri Lankan setting. A unified One Health framework, integrating human health, veterinary, and environmental research efforts, is vital to curb the spread of resistance and mitigate the judicious use of agricultural fungicides.



In superficial mycoses, dermatophytes have driven a recent surge in resistant recalcitrant infections spreading across South Asia and beyond. The origin of this crisis is largely attributed to the widespread prescribing and over-the-counter dispensing of combination creams containing potent topical corticosteroids and antifungals.⁴ The novel emerging pathogen *Trichophyton indotineae* causes extensive, severe, and treatment-resistant dermatophytosis. While regulatory measures have been introduced to restrict the importation of these combination creams, they remain readily accessible over the counter without a prescription. Educating community pharmacists who continue to dispense these preparations, alongside raising public awareness regarding the dangers of misuse, represents the most effective strategy to stem transmission.

Enhancing diagnostic capacity and advancing research into emerging fungal pathogens are essential steps toward improving outcomes for patients suffering from fungal diseases. Uniting available expertise, research infrastructure, and stakeholders across human, animal, and environmental sectors into a robust One Health network is imperative for ensuring a safer, healthier tomorrow.

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