

Editorial

Emerging role of saprobic fungi in human and animal health

Fungi are a versatile group of living heterotrophic, achlorophyllous eukaryotic organisms, which are responsible for many diseases in humans, animals, and plants. It is estimated that about 5 million species of fungi are prevalent in the universe, of which only 600 have been found to be associated with infections in humans and animals. In India, about 27,000 species of fungi are reported by several researchers. Fungi are part and parcel of our environment as are frequently isolated from soil, air, water, and other natural substrates. It is stated that about 25 % of world's cereals (food crops) are contaminated by fungal toxins annually. The loss of animal protein, viz. milk, meat, fish, and egg because of mycotic infections, directly cause great financial losses to the dairy, fish, and poultry industries throughout the world. Fungal diseases are important from public health and economic point of view, and are reported from developed as well as developing nations of the world. As mycotic diseases are not notifiable, the exact data on their prevalence and incidence is grossly inadequate. However, it is presumed that at least 800 million people in world have suffered from one or other types of fungal diseases indicating the growing significance of mycoses in human health. Currently, there are over 600 species of *Aspergillus*, of which 30 are implicated in human and animal infections. There are around 200,000 million cases of invasive aspergillosis each year in the world. Fungal infections can occur in sporadic and epidemic form, resulting in high morbidity and mortality. It is pertinent to mention that 90% of the invasive fungal infections have been encountered in immune compromised patients. The high mortality due to invasive fungal infections is of great concern.

A large number of fungi, such as *Absidia corymbifera*, *Acremonium falciforme*, *A. kiliense*, *Alternaria alternata*, *A. chlamydospora*, *A. tenuissima*, *Aphanoascus fulvescens*, *Apophysomyces elegans*, *Aspergillus candidus*, *A. clavatus*, *A. chevalieri*, *A. deflectus*, *A. flavus*, *A. fumigates*, *A. glaucus*, *A. niger*, *A. ochraceus*, *A. sydowii*, *A. tamarii*, *A. terreus*, *A. ustus*, *A. versicolor*, *A. wentii*, *Aureobasidium pulluans*, *Bipolaris hawaiiensis*, *B. spicifera*, *Blastomyces dermatitidis*, *Chaetomium fomicolum*, *Cladophialophora carionii*, *Coccidioides immitis*, *Cryptococcus neoformans*, *C. gatii*, *Curvularia geniculata*, *C. lunata*, *Exophiala jeanselmei*, *E. rostratum*, *Fonsecaea compacta*, *F. pedrosoi*, *Fusarium moniliformis*, *F. oxysporum*, *F. proliferatum*, *F. solani*, *F. verticillioides*, *Geotrichum candidum*, *Helminthosporium spiciferum*, *Histoplasma capsulatum*, *Madurella grisea*, *M. mycetomatis*, *Microsporium gypseum*, *Mucor circinelloides*, *Paecilomyces lilacinus*, *P. variotii*, *Paracoccidioides brasiliensis*, *Penicillium citrinum*, *Phaeoannellomyces elegans*, *P. werneckii*, *Philophora bubakii*, *P. parasitica*, *P. repens*, *P. richardsiae*, *P. verrucosa*, *Phoma hiberica*, *P. upyrena*, *Pseudoallescheria boydii*, *Rhinocladiella aquaspera*, *Rhizomucor pusillus*, *Rhizopus arrhizus*, *R. microsporus*, *Rhodotorula glutinis*, *Saksenaia vasiformis*, *Sarcinomyces phaemuriformis*, *Schizophyllum commune*, *Scopulariopsis brevicaulis*, *Scytalidium dimidiatum*, *S. hyalinum*, *Trichphyton verrucosum*, *Trichosporon beigilii*, *Ulocladium chartarum*, *Veronaea botryose*, *Verticillium serrae*, *Wangiella dermatitis*, and *Xylohypha emmonsii* are from recovered from many sources, such as soil, litter, bat guano, pigeon droppings, avian excreta, manure, sewage, maize, wheat, oat, rice, pea, cottonseed, potato, onion, tomato, cucumber, sugarcane, sorghum, groundnut seed, soybean, apple, banana, orange, grape, milk, bread, paper, leather, hay, straw, rye grass, and wood etc. Fungi are cosmopolitan in distribution, and may enter the susceptible host by inhalation of infectious fungal cells/ conidia through respiratory tract. Traumatic implantation of the fungus into the skin results in infection to the host. Occasionally, ingestion of fungi in contaminated foods may also cause infection. Fungus can affect any organ of the body, such as skin, nail, ear, eye, sinus, mouth, lung, heart, kidney, brain, and bone. The fungi can cause infections in immune competent as well as immune compromised persons. Many species of *Alternaria*, *Aspergillus*, *Fusarium* are known plant pathogen and can also produce disease in humans and animals including birds. It is recommended to study the impact of saprobic fungi on the health of humans, animals, and plants.

Fungi can be cultured from diverse types of samples on several mycological media, such as Sabouraud dextrose agar, potato dextrose agar, oat meal agar, Pal sunflower seed medium (pulverized sunflower seed 4.5 g, agar 2 g, chloramphenicol 10 mg, distilled water 100 ml) (Pal, 1980), APRM (Anubha, Pratibha, Raj, Mahendra) medium (Dried Mary gold flower 4.0 g, agar 2.0 g, chloramphenicol 50 mg, distilled water 100 ml) (Dave and Pal, 2015). The morphology of fungal isolates can be easily studied in *Narayan* stain developed by Pal in 1998. It contained