

## A BRIEF REVIEW OF ACANTHAMOEBA ISOLATES IN MALAYSIA

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### ABSTRACT

*INTRODUCTION: Acanthamoeba, a free-living amoeba found in diverse environments, poses significant health risks in Malaysia, particularly causing Acanthamoeba keratitis (AK) in contact lens wearers and granulomatous amoebic encephalitis (GAE) in immunocompromised individuals. The amoeba's ability to serve as a reservoir or "Trojan horse" for resistant bacteria complicates infection control, while the cystic form's resilience challenges treatment efficacy. Malaysia faces increasing AK cases due to environmental contamination and poor contact lens hygiene. OBJECTIVES: This review aims to summarize the challenges of managing Acanthamoeba infections in Malaysia and explore advancements in natural therapies and diagnostic approaches. METHODOLOGY: A comprehensive literature review was conducted by searching databases such as PubMed and Google Scholar for relevant studies on Acanthamoeba isolates in Malaysia. Data extraction included details on sample types, isolation methods, and therapeutic approaches. Analysis focused on diagnostic and treatment challenges, environmental risk factors, and recent natural therapeutic advancements. RESULTS: The review revealed widespread environmental contamination with Acanthamoeba across Malaysia, particularly in water sources used by contact lens wearers. Diagnostic methods primarily rely on microscopy and culture, with molecular techniques like polymerase chain reaction (PCR) showing higher precision. Treatment remains challenging due to the cysts' resistance to standard therapies. However, recent studies on natural products, such as betulinic acid derived from *Pericampylus glaucus* (Broad-leaved Moonseed, locally known as Akar Menkunyit), have shown promising in vitro results. Nanotechnology applications using gold and silver nanoparticles have enhanced drug efficacy but require further validation in clinical settings. CONCLUSION: Acanthamoeba poses a growing threat in Malaysia due to its environmental prevalence and the challenges in diagnosis and treatment. Advancements in natural therapies and nanotechnology provide promising avenues for future research, but more in vivo studies and public health strategies are needed to address these infections effectively.*

Keywords: acanthamoeba, acanthamoeba keratitis (ak), natural therapeutics, nanotechnology, cyst resistance

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