

## **Identification and Molecular Characterization of *Acanthamoeba* spp. from Used Contact Lenses Collected Among the UiTM Students**

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### **Structured Abstract**

**Background:** *Acanthamoeba* spp. is a microscopic free-living amoeba that can cause permanent blindness. The use of contact lenses is one of the major factors that can contribute to the infection as contact lenses on the eye create micro-abrasion on the cornea creating an entry for microorganisms or by creating low-oxygen environments that render the normal integrity of cornea. The aim of this study was to test the reliability and reproducibility methods in determining the presence and species of *Acanthamoeba* spp. trophozoite or cyst from used contact lenses in a non-clinical set up laboratory.

**Methods:** Contact lens samples were collected randomly among the students and were preserved in a chiller in the laboratory provided by the institute. Direct microscopic observation, DNA Extraction, Polymerase Chain Reaction (PCR) and Gel Electrophoresis was conducted on 10 pairs of contact lens paraphernalia collected to have more critical analysis in determining the presence of *Acanthamoeba* spp. in the sample through microscopy and molecular characterization approach.

**Results:** As a result, approaches using microscopy showed no presence of the amoeba where only human flea legs can be found. However, to confirm the absence of the *Acanthamoeba* spp. this study proceeded with the molecular approach. Unfortunately, the molecular approach also shows no sign of the genomic trace of *Acanthamoeba* spp. The successful amplification and visualization of the positive control confirmed that the instruments, reagents, and experimental protocols were functioning correctly. The absence of amoeba was due to several factors such as low prevalence cases in Malaysia, the presence of the active ingredients in contact lenses disinfecting solution, and the natural resistance of the *Acanthamoeba* spp. cyst, low number of samples that are being collected and lastly the presence of the immune cell in the tears.

**Conclusion:** The successful amplification and visualization of the positive control confirmed that the experimental protocols were functioning correctly. These findings may indicate effective hygiene practices among contact lens users within the sampled population, which is a positive public health observation.

**Keywords:** *Acanthamoeba* spp., Contact Lenses Paraphernalia, PCR Analysis, Contributing Factors, Molecular Characterization

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