



**ANTI-ACANTHAMOEBA ACTIVITY OF MULTIPURPOSE
CONTACT LENS SOLUTIONS AGAINST
ACANTHAMOEBA spp. OF KERATITIS PATIENTS**

By

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DECLARATION

I hereby declare that this thesis is based on my original work and has not been submitted previously or currently for any other degree student at UiTM or other institutions.

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ABSTRACT

Acanthamoeba spp. is an opportunistic free-living amoeba that widely distributed in the environment and it has tendency to produce serious corneal infection that can result in permanent visual impairment or blindness known as chronic *Acanthamoeba* keratitis (CAK). Approximately 92% of *Acanthamoeba* keratitis patients were among contact lens wearers. Therefore, the usage of effective multipurpose contact lens solutions is currently recommended to prevent *Acanthamoeba* keratitis among contact lens wearers. This study was performed to determine the effectiveness of multipurpose contact lens solutions against *Acanthamoeba* spp. after 4, 6, 8 and 24 hours soaking time and also to classify the group of *Acanthamoeba* spp. based on their morphology using methylene blue stain. To determine the effectiveness of multipurpose contact lens solutions, two clinical specimens from keratitis patients were tested with five multipurpose contact lens solutions in which AOsept® Plus, Oxysept®, Opti-free® Puremoist®, Renu®fresh™ and Complete® Revitalens™. The specimens were isolated in triplicate on non-nutrient agar seeded with heat-killed *Escherichia coli* suspension and been incubate at 30°C. Daily screening for the presence of *Acanthamoeba* spp. was done up to two weeks by using inverted microscope. The morphology of *Acanthamoeba* spp. was identified using methylene blue stain. Fisher's exact test was applied to determine the significance value of the results. The results revealed that both of hydrogen peroxide and non-hydrogen peroxide multipurpose contact lens solutions used in this study did not shows any anti-*Acanthamoeba* activity after 4, 6, 8 and 24 hours. This result is not significance since the *p-value* was higher than 0.001. Regarding to the morphology of *Acanthamoeba* spp., both of clinical isolates belongs to Group II of *Acanthamoeba* spp. As a conclusion, multipurpose contact lens solutions used in this study were not effective as anti-*Acanthamoeba* agents because of the active compounds in the contact lens solutions were insufficient. Thus, the addition of extra active compound in contact lens solutions such as propylene glycol for the disinfection of *Acanthamoeba* spp. should be developed in order to reduce the incidence rates of CAK among contact lens wearers.