

UNIVERSITI TEKNOLOGI MARA

**PRESERVATIVE-FREE STERILE EYE DROPS
CONTAINER DESIGN**

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ABSTRACT

The aim of this study was to design eye drop container where dispensing of medication can be affected without introducing microbial load into the unused content. The preservative – free sterile eye drops container was prepared by designing the types of preservative – free sterile eye drops container that incorporated with valve, flexible nozzle, and small hole which located at the dispensing tip with the open and close cap. The mechanism flow of preservative – free sterile eye drops container was shown and subjected by using the 3 ml latex free syringe attached with the 1 ml of small needle syringe implemented. The bacterial detection had been investigated by spreading the 1 ml of sterile solution that may kept inside the syringe over the entire nutrient agar surface. The microbial colonies images revealed that the multiple application container with flexible nozzle used for air expulsion to remove residual liquid reduce the microbial contamination. The preservative – free sterile eye drops container with flexible nozzle which resulted in reduce the bacterial contamination than current eye drops.

CHAPTER 1

INTRODUCTION

1.1 Background of study

Eye drops are saline-containing drops administered via an ocular route. Depending on the condition being treated, they may contain steroids, antihistamines, sympathomimetics, beta receptor blockers, parasympathomimetics, parasympatholytics, prostaglandins, non-steroidal anti-inflammatory drugs (NSAIDs) or topical anaesthetics. Eye drops sometimes do not have medications in them and are only lubricating and tear-replacing solutions.

Preservatives are meant to prevent microbial spoilage across a broad spectrum and to protect the eye against possible secondary infection and currently used in ophthalmic preparations. Their action is non-specific and they can damage ocular tissues. Medical reports have described ocular damage due to preservatives and patients using preserved eye drops are at risk of developing ocular surface disorders (Baudouin, Labbé et al., 2010).