

## INTRODUCTION

Contact lens (CL) cases become contaminated with microbes during use [1,2]. Microbial contamination of CL cases may result in biofilm formation [3]. Bacteria within a biofilm are less susceptible to antimicrobials and multipurpose contact lens disinfection solutions [4]. The biofilm can then serve as a source of bacteria to contaminate contact lenses during storage [5]

## AIM

To evaluate bacterial transmission from biofilms in contact lens storage cases to contact lenses during storage and disinfection.

## METHODS

- A contact lens disinfection solution containing Povidone-Iodine (PI) (Cleadew, Ophtecs Corporation, Japan) was used.
- Biofilms of *Pseudomonas aeruginosa* 071 or *Staphylococcus aureus* 031 were grown in lens cases for 24 hours.
- Etafilcon A or senofilcon A contact lenses were placed in biofilm laden lens storage cases and either:
  1. Disinfected with solution for 4 hours, or
  2. Stored in rinsing solution for 4 hours, or
  3. Stored in saline solution for 4 hours.
- The number of bacteria in lens storage cases and contact lenses were then estimated by culture.

## RESULTS

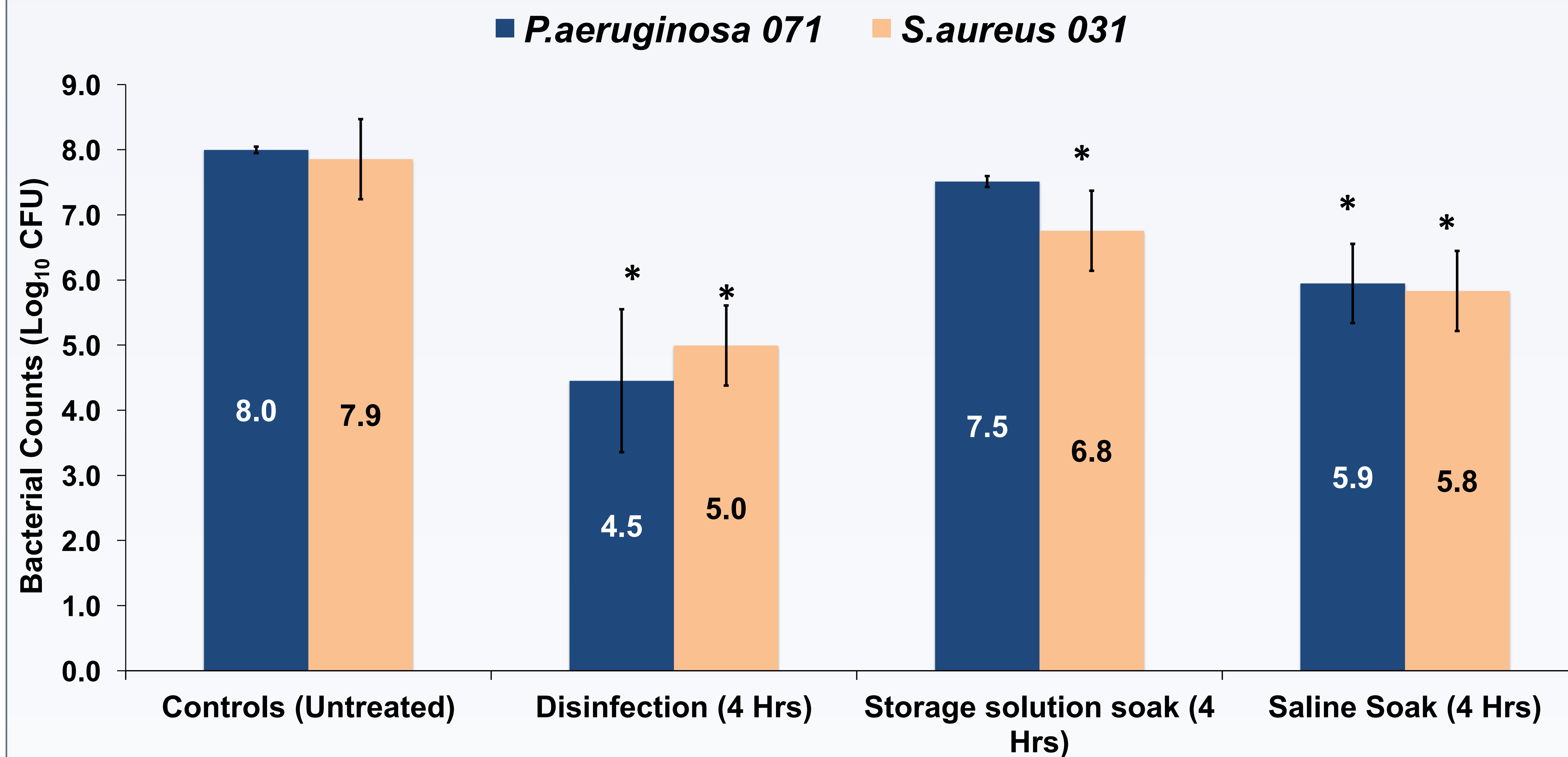


Figure 1: Number of bacteria (Mean ± 95% CI) isolated from contact lens storage cases. (\* p<0.01, Compared to Untreated Cases)

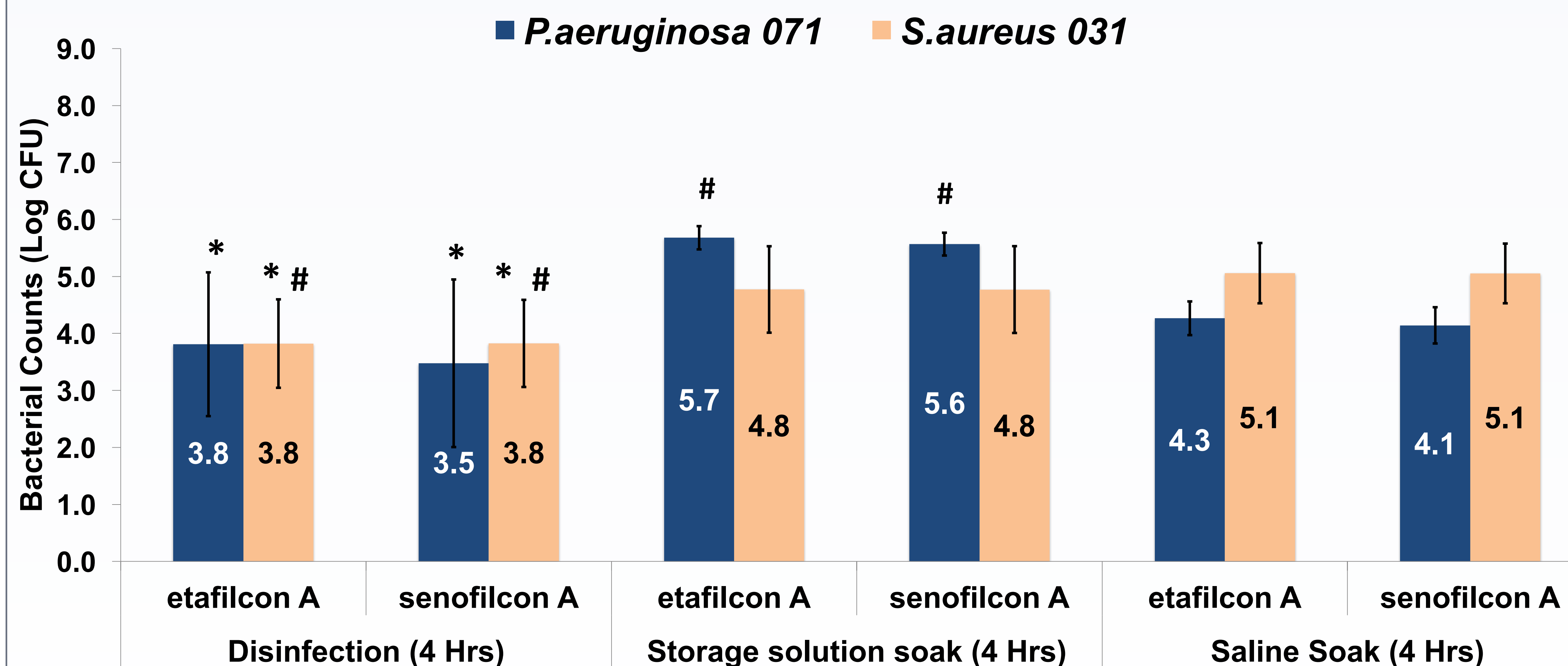


Figure 2: Comparison of bacterial transmission (Mean ± 95% CI) to etafilcon A and senofilcon A contact lenses from treated lens storage cases. (\* p<0.01, compared to lenses in storage solution soaked cases; # p<0.01, compared to lenses in saline soaked cases)

## RESULTS

- There was a significant reduction in *P.aeruginosa* (-3.5 log<sub>10</sub> CFU; p<0.01) and *S.aureus* (-2.9 log<sub>10</sub> CFU; p<0.01) biofilms following 4 hours disinfection with Cleadew (Figure 1).
- There was no difference in bacterial transmission to the 2 lens materials (Figure 2). 26% of *P. aeruginosa* and 13% of *S. aureus* were transferred to contact lenses from disinfected storage cases.
- Contact lenses from disinfected storage cases had significantly lower numbers of *P. aeruginosa* (-2.0 log<sub>10</sub> CFU, p<0.01) and *S. aureus* (-1.0 log<sub>10</sub> CFU, p<0.01) compared to lenses from storage cases filled with only rinsing solution.

## CONCLUSION

Cleadew contact lens disinfecting solution containing povidone-iodine is very effective at reducing bacterial biofilm in lens cases. Bacterial transmission to contact lenses can also be reduced by proper disinfection of contact lens storage cases.

## REFERENCES

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