

# A Comparison of the Antimicrobial Properties of Silver Dressings for Chronic Wound Care



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## Introduction

Silver and its compounds have been widely used as antimicrobial agents in wound care for many years  
Silver is a proven antimicrobial for controlling bacteria, fungus (mould & yeast), algae, and viruses  
Historically, the main clinical use of silver has been for the routine management of burn patients for the prevention of cross-infection or self-infection  
More recently, silver has been used for the management of infection in chronic wounds

## Aim

The aim of the study was to compare the antimicrobial performance of three silver chronic wound care dressings

## Selection of Assay

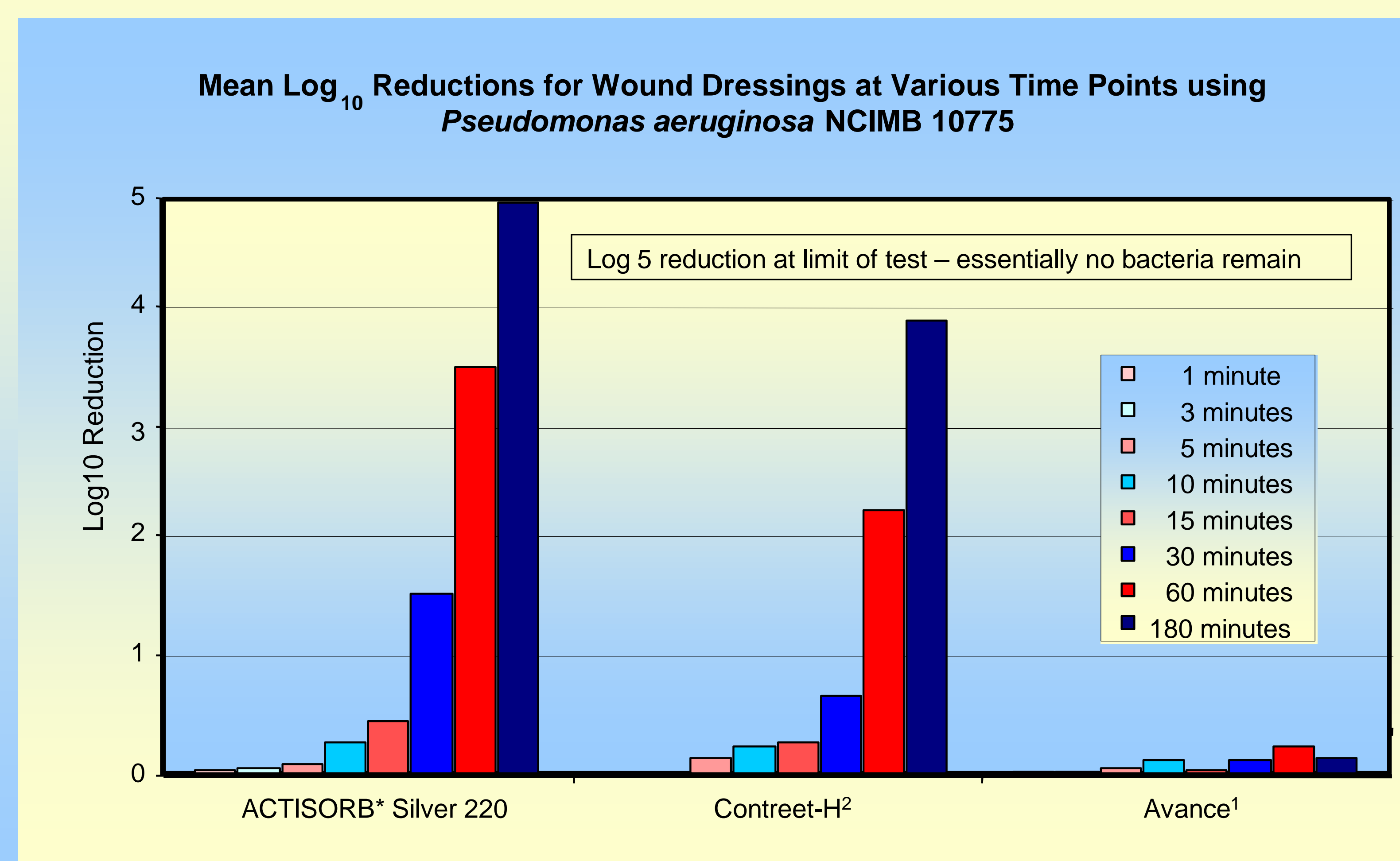
Traditional qualitative zone of inhibition assay for antibiotic susceptibility testing (which relies on the diffusion of the active ingredient through the agar) is not an appropriate test for dressings that do not release the antimicrobial

A log<sub>10</sub> reduction assay was developed to compare the antimicrobial properties of the dressings allowing for a quantitative determination of the antimicrobial activity

The dressing was tested in a liquid suspension of a known concentration of a test micro-organism

Rotation of the wound dressing and the micro-organism suspension ensures direct contact between the antimicrobial agent and test micro-organism

## Log<sub>10</sub> Reduction *Pseudomonas aeruginosa*



### Avance<sup>1</sup> with Bacti-Shield<sup>1</sup>

A soft modified hydrophilic foam sheet with a wound contact surface

The foam & wound contact surface is impregnated with a non-leaching antimicrobial silver compound

### ACTISORB\* Silver 220

An activated charcoal cloth dressing comprising odour adsorbing activated carbon impregnated with antimicrobial silver retained in a nylon pouch

### Contreet-H<sup>2</sup> Antimicrobial Hydrocolloid Dressing

A hydrocolloid dressing impregnated with releasable ionic silver

## Test Methodology

A log<sub>10</sub> reduction assay was employed to assess the activity of the different wound dressings

Individual sterile 1.0 x 1.0 cm pieces of the wound dressings were challenged in triplicate with a freshly prepared *Pseudomonas aeruginosa* NCIMB 10775 suspension in a peptone solution

At various time points a 1.0 ml sample of the bacterial suspension around the test item was analysed for bacterial count

Log<sub>10</sub> reductions were generated for each time point by subtraction of the bacterial count from the time zero count

*P. aeruginosa* controls were used to verify the bacterial concentration neither increased or decreased over the three hour evaluation period

## Conclusion

The antimicrobial properties of the silver dressings were evaluated using an *in-vitro* log<sub>10</sub> reduction test

ACTISORB\* Silver 220 indicated for infected wounds exhibited a superior log<sub>10</sub> reduction of *Pseudomonas aeruginosa* when measured over a three hour period

Contreet-H and Avance demonstrated a lower reduction of the bacteria

### Antimicrobial Efficacy *Pseudomonas aeruginosa*

ACTISORB\* Silver 220 > Contreet-H > Avance

\* Trademark of Johnson & Johnson

<sup>1</sup> Trademark of SSL International

<sup>2</sup> Trademark of Coloplast GmbH