**BACKGROUND**

- Antimicrobial resistance continues to be a global issue in healthcare, and consequently there is increasing interest in alternative agents that can support wound healing and prevent colonisation and infection.
- Honey contains innate antimicrobial components (methylglyoxal, bee defensin-1 and hydrogen peroxide) and has been used as a topical antiseptic for at least 5000 years [1].
- Surgihoney™ (SH) (Figure 1) is not a natural honey but an engineered formulation of honey with enhanced antimicrobial properties (owing in part to enhanced production to hydrogen peroxide; H₂O₂) (Figure 2). It is scalable as it does not rely on a single floral source.
- Patients with severe ulcers, pressure sores, and infected traumatic wounds have been treated topically with SH and favourable clinical outcomes have been observed (Figure 3) [2,3].

**OBJECTIVE**

To test the in vitro antibacterial activity of Surgihoney™ against biofilms

**METHODS**

- Four isolates of *Pseudomonas aeruginosa* and four of *Acinetobacter baumannii* were tested (Table 1) against four formulations of honey (diluted from 1:2 to 1:4096):
  - Surgihoney (SH) 1, 2 and 3 (with the latter designed to be more antimicrobial)
  - Manuka honey (MH) (Comvita, Manukacare™ 18+)
- Two laboratory experiments performed (in 96 well microtitre trays):
  - Biofilm Formation Inhibition Assay (BFIA)
  - Biofilm Seeding Inhibition Assay (BSIA)

**RESULTS**

- SH formulations 1, 2 and 3 were able to prevent biofilm formation (in a dose-dependent manner) for all *P. aeruginosa* and *A. baumannii* tested (Figure 6a & Table 1):
  - MH was also able to prevent biofilm formation, but only at the stronger dilutions (Figure 6b & Table 1).
- All formulations were effective at reducing the seeding of pre-formed biofilms of *A. baumannii* (Figure 7):
  - MH was again only effective at the stronger dilutions.

**CONCLUSIONS**

Our experiments show that SH can prevent biofilm formation and reduce the seeding of pre-formed biofilms.

- SH is therefore a promising topical antimicrobial agent with potent anti-biofilm activity against key Gram-negative pathogens of burn wounds.

Further experiments and controlled clinical trials are warranted to assess activity against biofilms produced by Gram-positive organisms, a wider range of Gram-negative organisms, and to formally assess clinical efficacy.