

Application note: Pertinax[™] antimicrobial sutures

Introduction

Sutures are used to close wounds after surgery. Antimicrobial sutures reduce post-operative infection and associated complications in certain surgical procedures. The most common antimicrobial sutures contain Triclosan, but Triclosan is under scrutiny owing to its propensity to accumulate in the environment. Furthermore, to offer effective infection protection, it is important that the antimicrobial efficacy of sutures is sustained for several days, and the efficacy of Triclosan sutures falls rapidly over time (Obermeier 2014). There is opportunity for product differentiation by incorporating novel, safe, sustained antimicrobials into sutures.

Pertinax technology

Pertinax is a patented technology that provides slow release of chlorhexidine when in an aqueous environment. The chlorhexidine is sequestered in complex phosphate salts, and the release kinetics including dose and duration can be selected using formulation and other parameters. Pertinax technology is proprietary to Pertinax Pharma Ltd, a company in north Bristol, UK.

Pertinax sutures

Sutures of two major brands were functionalised with Pertinax using a facile immersion process. The Pertinax-doped sutures exhibited zones of inhibition (ZOI) comparable to those of Triclosan sutures at $t = 0$ min, when tested against common wound pathogens *E. coli* and *S. aureus*. Commercial and Pertinax-doped sutures were also aged for 24 and 48 h in phosphate-buffered saline at 37 °C with agitation, to mimic physiological conditions. Pertinax-doped sutures retained antimicrobial efficacy at 24 and 48h, whereas Triclosan sutures were no longer effective after 24h (Fig. 1). Thus, with appropriate incorporation techniques, the efficacy of Pertinax sutures will be sustained for the lifetime of the suture without the bioaccumulation concerns of Triclosan.

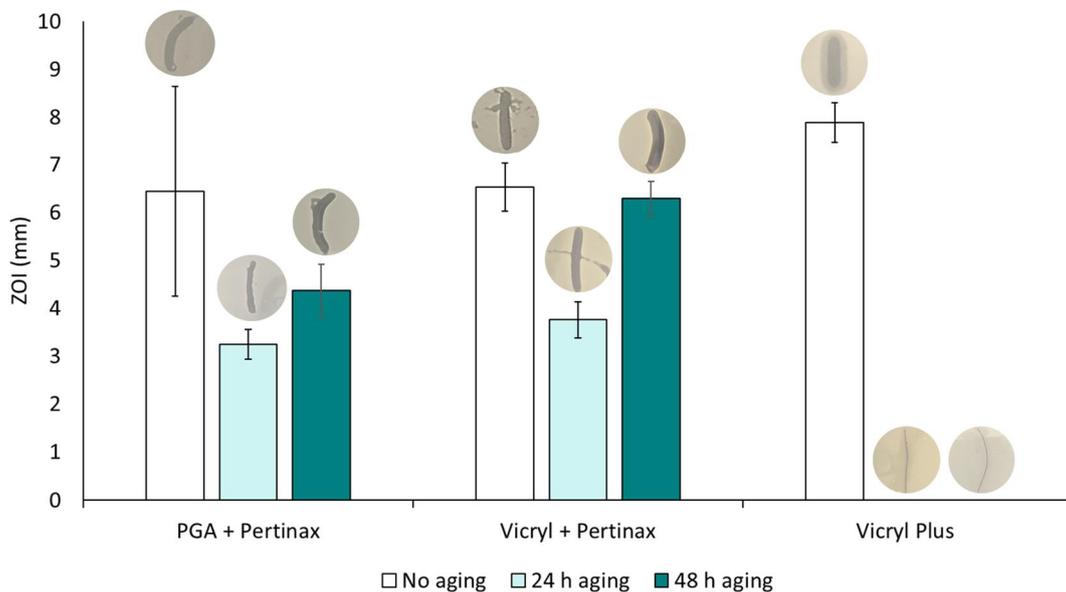


Figure 1. Graph and images summarising ZOIs of PGA Resorba and Vicryl sutures coated with Pertinax, compared to Vicryl Plus (coated with Triclosan), when tested against *E. coli* after 0, 24 and 48 h aging.

Opportunities

To explore opportunities to incorporate Pertinax into sutures within your woundcare portfolio, contact info@pertinaxpharma.com.