New publication – Attana's technology employed in the development of antibacterial coatings for future surgical implants

A new paper has been published in MicrobiologyOpen by Prof. Hedhammar and co-workers at the Royal Institute of Technology and Stockholm University. In this paper, recombinant spider silk was functionalized with enzymes having antibacterial properties. This has the potential to be used as surface coatings of surgical implants and other medical equipment to avoid bacterial colonization. Attana's QCM technology was employed to evaluate the immobilization of the enzymes to the spider silk and the assembly of the spider silk.

Bacteria can attach to and grow biofilms on virtually any surface, which thus sometimes occurs at surgical sites and on surgical implants. A biofilm consists of proteins, nucleic acids, polysaccharides, and lipids that are secreted by bacteria. The biofilm protects the bacteria from antibiotics by providing a physical barrier that hinders the antibiotic from reaching them. To decrease the risk of infections related to surgery, antibacterial coatings that protect against various bacterial strains are being developed. Silk is an example of a coating suitable for *in vivo* usage since it is biocompatible and non-toxic.

In this paper, two enzymes with antibacterial properties were attached to recombinant spider silk to create antibacterial and biofilm-preventing coatings. The first enzyme, Dispersin B, is a biofilm-matrix-degrading enzyme that target for example biofilms of *S. aureus*. The second enzyme, SAL-1 has the capability of degrading cell walls of bacteria. Two different approaches to functionalize silk coatings with these enzymes are presented in this paper. The two approaches are functionalization before assembly of the silk protein and after assembly of the silk protein

Attana's QCM technology was used to monitor spider silk assembly and enzyme immobilization. Once immobilized, the enzyme activity was investigated. Spider silk coatings functionalized with Dispersin B and SAL-1 inhibited biofilm formation and showed bacteriolytic effect, respectively. The approach to immobilize antibacterial enzymes to spider silk has the potential to be used as surface coatings of surgical implants and other medical equipment to avoid bacterial colonization.

Attana's technology has previously been employed to bacterial assays: read more here:

https://news.cision.com/attana/r/new-attana-publication---increased-target-specificity-for-new-drugs-by-applying-attana-s-technology-,c2819785

https://news.cision.com/attana/r/new-publication-showing-improved-recognition-of-bacteria-helping-the-development-of-future-antibioti,c2666404

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The Board of directors for Attana consider that the information in this press release is not likely to have a significant effect on the share prices, but is of general interest for the shareholders and hence should be communicated.

Attana was founded in 2002 with the vision of *in-vitro* characterization of molecular interactions mimicking *in-vivo* conditions. Since then, Attana has developed proprietary label free biosensors for biochemical, crude, sera, and cell-based assays. Attana's products and research services are used by Big Pharma, biotech companies and academic institutions within the life sciences. To learn more about Attana's contract research services and our label free cell-based biosensors, please visit www.attana.com or contact sales@attana.com.