

Inhibit™ Biomimetic Non-Fouling Platform

The **Inhibit™ Biomimetic Platform** provides superior *non-fouling* and *non-thrombogenic* properties, which help suppress cellular adhesion, as well as platelet and protein adsorption

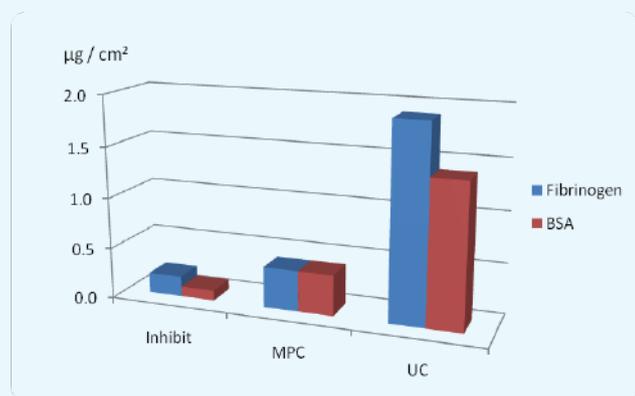
The Clinical Issue

The interfacial properties of an artificial device play a critical role in determining biocompatibility and haemocompatibility when implanted within the body. Proteins and other blood components can adhere and adsorb onto the surface of a material, leading to undesirable outcomes. The mechanism by which platelets adhere to a surface starts with the adsorption of proteins and is followed by a cascade of events that can result in thrombus formation.

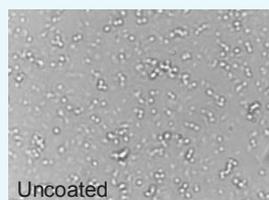
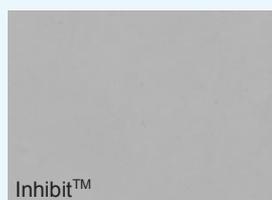
In order to overcome this phenomenon, BioInteractions has taken inspiration from the natural cell membrane and combined this with additional biocompatible functionality to deliver the next generation in synthetic biomimetic technology, **Inhibit™**.

Inhibit™ Protein and Platelet Adhesion

The **Inhibit™** platform provides superior non-fouling and non-thrombogenic properties, which can be utilised as either a coating or as a surface modification strategy on your medical device. *In-vitro* evaluations of **Inhibit™** have tested the coating platform against both fibrinogen (Fg) and albumin (BSA) and have demonstrated up to **93% reduction** in Fg adsorption and up to **96% reduction** in BSA adsorption compared to an uncoated material's surface. The coating also performs well in comparison to an MPC coated surface (see graph below).



In addition, platelet adhesion onto a surface coated with the **Inhibit™** platform was **reduced by 92%** (left image) when compared to an uncoated surface (right image).



Surface Modification

The **Inhibit™** platform was developed at BioInteractions and consists of a biomimetic zwitterionic core, coupled with an additional biocompatible moiety and can be tailored to suit various devices, geometries and applications. The **Inhibit™** platform has demonstrated excellent stability on poly(olefin), poly(styrene), poly(urethane), poly(vinyl chloride), silicone and many other substrates. The nature of the technology means that it can be tethered directly onto a surface or incorporated into a polymer for use as a non-fouling coating. The coating process is typically 1-step, followed by heat-curing to afford the final coated product.

Applications

The enhanced haemocompatibility and non-fouling properties of **Inhibit™** can be applied to a wide range of medical devices, including blood contacting devices, such as CVC's, haemodialysis catheters and stents, as well as tissue-contacting devices.

The highly hydrophilic nature of **Inhibit™**, which arises from the zwitterionic core, means that it can also be integrated into contact lenses and intraocular lenses to provide high levels of hydration with minimised protein adsorption.



HEMA + Inhibit™

HEMA only

In-vitro evaluations have shown that contact lenses containing **Inhibit™** can reduce lysozyme adsorption by up to 93% when compared to high water content commercial contact lenses. HEMA lenses containing **Inhibit™** also demonstrate a higher rate of hydration, as well as a slower rate of dehydration, when compared with HEMA lenses alone.

Collaboration

BioInteractions is committed to the advancement of healthcare through the development of innovative technologies and welcomes interest in the **Inhibit™ Biomimetic Non-Fouling Platform** for application to both existing and new technologies that require the next generation of non-fouling technology.

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