Blood compatibility of titania-nanocellulose hybrid films

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Titania-nanocellulose hybrids films are attractive materials for controlled drug release.[1,2] Functional groups of pharmaceuticals can be adsorbed to the embedded titania nanoparticles in the nanocellulose with subsequent slow release. Many *in vitro* studies have demonstrated good potential for controlled drug delivery, but the biocompatibility of titania-nanocellulose films are less explored. Nanosized titania has recently shown to induce blood coagulation at as low concentrations as 50 ng/mL.[3] In another recent study, nanosized titania was found to promote wound-healing and reduce scar formation in rats.[4] Nanocellulose has proved to be a potential good wound-dressing material, providing a good healing environment. Nanocellulose has, however, no inherent antibacterial properties and there is a risk of infection. Adding titania nanoparticles functionalized with antibiotics to the nanocellulose for slow release would prevent infection of the wound. Little work on the biocompatibility of titania-nanocellulose films has been done, which is very important for the potential future application as wound-dressing and drug delivery. This study aims at investigating the blood compatibility of the titania-nanocellulose films.

[1] Evdokimova et al. *Nanomaterials*, **2018**, 8, 228.
[2] Galkina, O.L. *Journal of Materials Chemistry B* **2015**, 3, 1688–1698.
[3] Ekstrand-Hammarström, *Biomaterials*, **2015**, 51.
[4] Seisenbaeva et al. *Scientific Reports*, **2017**, 7.