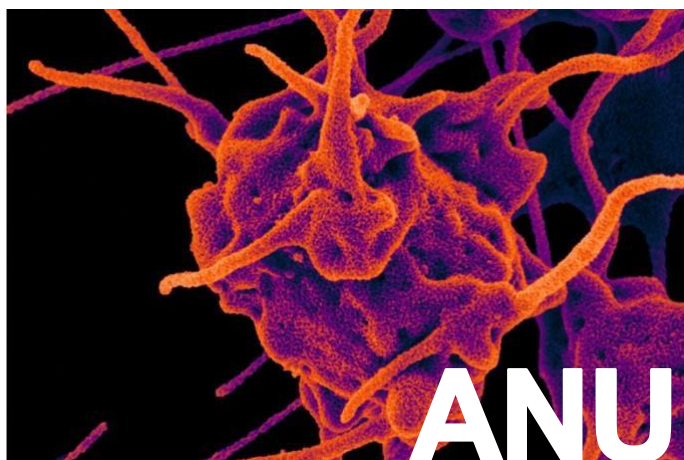


Superfast haemostat: Non-oxidised cellulose nanofiber based topical haemostatic agent



Haemorrhage or severe blood loss leads to approximately 2 million deaths every year globally (Healthline.com 2018). Various solutions are available to clinicians to manage haemostasis; however market research indicates substantial room for improvements in areas of cost, shelf-life, speed of haemostasis, biocompatibility (decrease of side-effects like immune response and scarring), and biodegradability.

ANU has developed a new non-oxidized cellulose-based nanofiber (CNF) that has demonstrated superior haemostatic properties against both Surgicel® and Combat Gauze®. The material can be fabricated using an environmentally friendly, cost-effective and scalable ball-milling process and can be administered as both a gel and a sponge.

<https://doi.org/10.1016/j.carbpol.2021.118043>

Potential benefits

A series of clinically relevant in-vitro (thromboelastometry) and in-vivo (terminal liver injury model and subcutaneous implantation model in mice) tests provide compelling data on superiority of our technology over current gold standards Surgicel® and Combat Gauze®.

- > **Speed:** Faster clotting times
- > **Firmness:** Increased clot firmness
- > **Reduced blood loss:** Reduced blood loss by > 2x in-vivo (mice) vs Surgicel®.
- > **Biocompatibility:** Does not scar, degrades slowly over time.
- > **Special Cases:** Demonstrated effectiveness against both heparinised and thrombocytopenia patient blood samples.

Potential applications

- > Vascular surgery
- > ENT surgery
- > Thrombocytopenia haemostasis
- > Heparinised patient haemostasis
- > External wound healing
- > Combat first-aid

Opportunity

The technology is currently at TRL-4 with the inventors investigating long-term safety in non-terminal animal models. ANU is looking for interest for or co-development of the technology for eventual license/spin-out.

IP status

The technology has reached the PCT stage PCT/AU2021/050591 and is owned by the Australian National University.

Key research team

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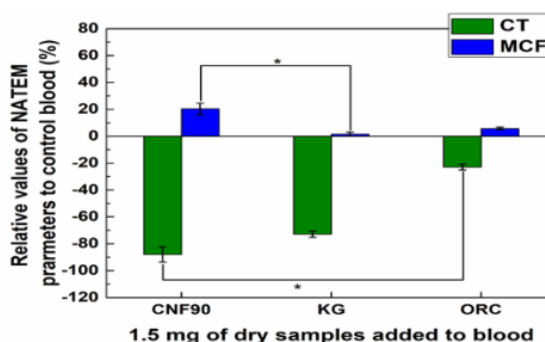


Figure 1: Coagulation parameters obtained from non-activated thromboelastometry (NATEM) assays in the presence of CNFs.