TECHNOLOGY LICENSING OPPORTUNITY

THE UNIVERSITY OF BRITISH COLUMBIA

Self-propelled Particles for Hemostatic Applications

Improved coagulation of blood in hemorrhage

Advantages:

- Delivery of coagulant deep into the wound at the site of hemorrhage
- Low cost of production
- Faster clotting time
- Surgical and field applications

Principal Inventor:

Dr. Christian Kastrup

Publications/References:

C. Kastrup and co-workers Science Advances 2015 (1) e1500379.

Patent Status:

Patent filed.

Reference #: 12-161

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Technology Details:

Death due to hemorrhage is a serious problem encountered both in hospitals and in the field. Delivering therapeutics deep into areas of severe bleeding is challenging due to the outward flow of blood. Various hemostatic agents have been developed for both topical and deep wound delivery of clotting factors however, to date their success has been limited.

Researchers at The University of British Columbia have developed a topical hemostatic agent to clot blood and halt hemorrhaging that is a vast improvement to current clotting agents. The novel agent is a simple, self-propelling particle of anti-coagulant with calcium carbonate, mixed with organic acid. These particles rapidly propel through blood (1cm/s) to the source of hemorrhage, and, when loaded with enzymatically active thrombin, they clot blood plasma flowing at over 1mm/s.

The hemostatic agent can be used in combination with other materials currently in practice (such as compression agents) to enhance their efficacy.

Key markets for the technology have been identified to include postpartum hemorrhage (PPH), nosebleeds, and trauma wounds. The majority of the need in the PPH market is in developing countries where 25% of maternal deaths are due to PPH. Severe nosebleeds (epistaxis) are common in emergency rooms and particularly problematic in haemophilia patients. Trauma wounds (combat, accidents) are an additional initial market focus. Generally, in these cases patients need to be treated at the site of injury (non-hospital) and the blood flow stopped immediately. The best treatment is compression materials with or without coagulant until surgery can be performed.

Development Stage:

The self- propelled hemostatic particles are currently in animal testing.

Last Updated: January 2016