Micron-Sized Drug Vehicle for Unregulated Blood Clotting

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Technology description

Market Summary

Life threatening occurrences of unregulated blood clotting such as Hemophilia A/B or Deep Vein Thrombosis can result in severe blood loss or unwanted blood clotting, respectively. In cases of severe blood loss, topical dressings or intravenously delivered hemostatic agents are the clinical standard of care. However, this approach is marginally effective in achieving clot formation, expensive, and requires complex and time consuming preparation. The current standard of care for unwanted blood clots requires administering low dose, systemic anticoagulant drugs. This delivery approach can result in diffuse, uncontrolled, and sometimes fatal patient bleeding. There is a need for more efficient, effective drug delivery systems to treat unregulated blood clotting.

Technical Summary

Emory University Researchers have developed a unique drug delivery approach by which therapeutics are delivered systemically but only released at sites that require blood clot regulation. Micron-sized capsules are used as drug vehicles, targeting specific tissues by interacting with naturally occurring coagulation pathways. By displaying fibrinogen on the exterior of the drug delivery vehicles, the drug-loaded vehicles will integrate into the fibrin network of the forming clot. The mechanical force of the contracting clot caused by activated platelets rupture the vehicle delivering the drug solely to the site of the clot. This fibrinogen-coated drug vehicle may be loaded with a clotting agent, coagulation factor, or anticoagulant drug.

Application area

Fibrinogen-coated micron-sized drug vehicles for targeted treatment of unregulated blood clotting.

Advantages

Facilitates targeted release of drugs specifically for blood clotting disorders.
Drug delivery vehicle can be used with newly discovered or known therapeutics on the market.
Site specific biological mechanism may help increase drug efficacy and avoid side effects.

Institution

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