Therapy For Treating Bleeding Disorders and Conditions

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Technology description

UC San Diego and The Scripps Research Institute investigators, Drs Annette von Drygalski, Andrew Gale, John Griffin and Laurent Mosnier have developed a therapy for treating bleeding disorders, including hemophilia and reversing excessive bleeding from use of anticoagulants such as Novel Oral Anticoagulants and others. The therapy comprises a blood factor protein that when administered in animal bleeding models or in human patient plasma containing inhibitors (FVIII neutralizing antibodies), is capable of clotting blood more effectively than current approaches. This novel therapy is more effective than currently used bypass agents such as recombinant FVIIa or variants thereof. Forms of this novel therapeutic may also be useful to treat or prevent bleeding due to excessively high levels of APC or bleeding that is associated with the use of novel oral anticoagulants.

During a normal blood loss injury, the body forms a clot to stop bleeding. Forming a blood clot requires certain blood cells, platelets, and their interactions with protein clotting or coagulation factors. Bleeding disorders comprise a group of conditions resulting when blood cannot clot properly due to defects in the platelets or clotting factors, and may range from mild to life threatening.

Hemophilia is a more well-known inherited X-linked bleeding disorder, predominantly affecting males, and current incidence is estimated at about 1/5000 live male births. Patients with hemophilia A lack clotting factor VIII (FVIII), and patients with Hemophilia B lack clotting factor IX (FIX). Patients manifest predominantly with severe spontaneous joint and muscle bleeds and often die from intracranial bleeding. Treatment and prophylaxis of bleeds consist of frequent infusions with FVIII or FIX clotting factor concentrates. Approximately 30% of hemophilia patients develop inhibitors (neutralizing antibodies) to FVIII or FIX. These patients are treated with FVIIa-based bypassing agents, but treatment remains suboptimal. Bypassing agents do not restore the normal pathways of hemostasis in hemophilia, but rather enable clotting by boosting thrombin generation and avoid the inhibitor’s blocking effects by circumventing a requirement for FVIII or FIX. However, at least 1/3 of patients do not respond adequately to FVIIa-based products, leaving these patients unprotected against bleeding, with a high burden of joint disease and at high risk of fatal bleeding.

In some cases patients are administered anticoagulant medications that may be associated with an increased risk of bleeding.

Application area

Possible commercial applications include use of the new therapy for treating hemophilia patients or patients needing procoagulant therapeutics to overcome excessive levels of anticoagulant factors.

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