

New Approaches to Modulating Blood Coagulation

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Technology description

Potential as Coagulation-inhibiting Medical Agent

Patients suffering from these symptoms and diseases are given coagulation-inhibiting substances to stimulate the body's own coagulation-inhibiting enzymes, such as antithrombin. Various anti-coagulants, such as heparin, are used in prophylaxis and therapy as well as during operations in order to inhibit blood coagulation. As the agents used so far have a number of side effects, alternative antithrombin co-factors are in great demand in the pharmaceutical and medical sector.

Scientists of the Institute of Nanotechnology (INT), in cooperation with the University of Murcia, Spain, have now found a new candidate agent that may possibly be better suited for application to diabetes patients and persons suffering from sugar allergy.

Application area

Anti-coagulants have many therapeutic applications. They are applied to patients having a disposition to the formation of blood clots (thrombus) and for the treatment of thrombosis and embolism in arteries or veins. The most frequent reasons for a therapeutic anti-coagulation are cardiac arrhythmias associated with an increased risk of embolism and thrombosis (mostly of the leg veins), hemophilia, pulmonary embolism, and infarction.

Advantages

The new control structure, D-myo-inositol 3,4,5,6-tetrakisphosphate, has a high coagulation-inhibiting potential and might be suitable for use as an anti-coagulant. The natural substance binds with nanomolar affinity to antithrombin and acts as a heparin co-factor. Contrary to conventional heparin analogs, this substance is not based on polysaccharides and does not exhibit any toxic properties in the model. First tests revealed an improvement of coagulation-inhibiting functions for patients with antithrombin deficiency and bad heparin uptake.

Institution

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