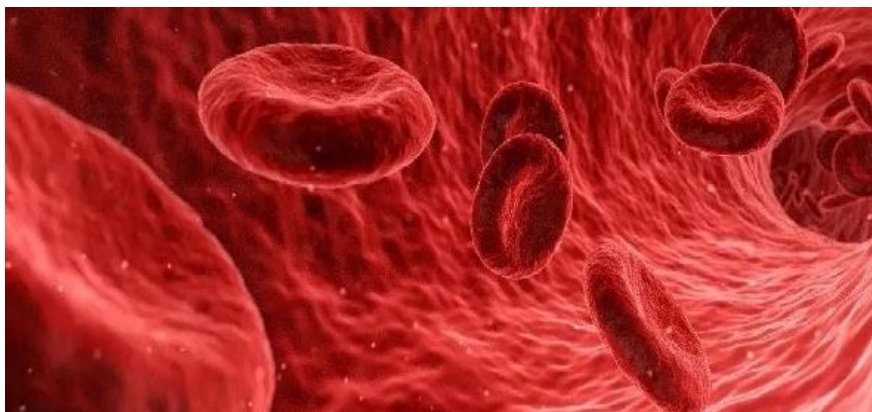


Technology Offer

CSIC/IM/076

New heparin antidote in the control of blood coagulation



Novel small molecules as valuable agents for controlling bleeding after heparin treatment. Lead compound studied has shown high efficacy and is expected to overcome side effects produced by current antidotes used in clinics.

Intellectual Property

Patent application filed in USA and EP

Stage of development

In vivo assays performed in mice

Intended Collaboration

Licensing and/or co-development

Contact

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Market need

Heparin is an anticoagulant widely used for prophylaxis and treatment of venous thrombosis and pulmonary embolism and to prevent clotting during dialysis and cardiac surgery, which represents more than 25% of the anticoagulants market.

In case of emergency bleeding, in response to heparin overdose or during heart surgery, protamine sulphate is administered as antidote. Despite its extensive clinical use, protamine may produce life-threatening side effects such as systemic hypotension, catastrophic pulmonary vasoconstriction or allergic reactions.



CSIC solution

Here is presented a new family of small compounds, based on spermine derivatives, which can be used as antidote to reverse heparin effects (both (unfractionated (UFH) and low molecular weight heparin (MLWH)).

In vitro, *ex vivo* and *in vivo* assays in mice show the capacity of these compounds to strongly revert bleeding of heparinized mice to values very similar to those of the control group.

Competitive advantages

- Reversion of heparin effect is obtained in just few minutes after administration.
- These small molecules can potentially reduce serious side effects associated to protamine and other antidotes under research.
- Compounds bind efficiently heparin favoring blood aggregation.
- Shape and size of blood cells remain unaffected after treatment.
- Lead compound effective against UFH, MLWH and other related compounds.