Claims

1. Use of an antithrombotic molecule having both antiplatelet and anticoagulant (APAC) activity comprising a human plasma protein to which there is attached, via a plurality of linker molecules, a plurality of heparin chains selected from the group comprising 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, and 16, each chain having a MW in the range 10-21 KDa for the manufacture of a medicament for prevention and/or treatment of thrombocytopenia, wherein said thrombocytopenia is selected from the group comprising, including any combination thereof: heparin-induced thrombocytopenia (HIT) type I; heparin-induced thrombocytopenia (HIT) type II; heparin-induced thrombocytopenia and thrombosis (HITT); heparin-independent thrombocytopenia aHIT; and in vaccine-induced thrombocytopenia and thrombosis (VITT).
2. The use according to claim 1 wherein said thrombocytopenia is selected from the group comprising: heparin-induced thrombocytopenia (HIT) type II; and heparin-induced thrombocytopenia and thrombosis (HITT).
3. The use according to claim 1 wherein said thrombocytopenia is immunologically-based and selected from the group comprising: heparin-induced thrombocytopenia (HIT) type II; heparin-induced thrombocytopenia and thrombosis (HITT); heparin-independent thrombocytopenia aHIT; and in vaccine-induced thrombocytopenia and thrombosis (VITT).
4. The use according to claim 1 wherein said thrombocytopenia is non-immunologically-based and selected from the group comprising: heparin-induced thrombocytopenia (HIT) type I; heparin-induced thrombocytopenia and thrombosis (HITT); and in vaccine-induced thrombocytopenia and thrombosis (VITT).
5. The use according to claim 1 wherein said thrombocytopenia is caused by heparin and selected from the group comprising: heparin-induced thrombocytopenia (HIT) type I; heparin-induced thrombocytopenia (HIT) type II; thrombocytopenia and thrombosis (HITT); and in vaccine-induced thrombocytopenia and thrombosis (VITT).
6. The use according to any one of claims 1 – 5 wherein said APAC molecule has 4, 5 or 6, heparin chains attached to said plasma protein.

7. The use according to any one of claims 1 - 6 wherein said APAC molecule has 5 heparin chains attached to said plasma protein.
8. The use according to any one of claims 1 - 7 wherein said APAC is formulated for administration at a dose, in blood or plasma, within the range 0.15 µg/ml - 10 µg/ml, including all 0.1 µg/ml there between.
9. The use according to claim 8 wherein said APAC is formulated for administration at a dose within the range 1 µg/ml - 3 µg/ml, including all 0.1 µg/ml there between.
10. The use according to any one of claims 1 - 7 wherein said APAC is formulated for administration at a dose within the range 0.1 – 0.3 mg/kg.
11. The use according to any one of the preceding claims wherein said human plasma protein is selected from the group comprising or consisting of: albumin, globulin or fibrinogen.
12. The use according to claim 11 wherein said human plasma protein is serum albumin or alpha2-macroglobulin.
13. The use according to any one of the preceding claims wherein said human plasma protein is recombinant.
14. The use according to any one of the preceding claims wherein said heparin is unfractionated heparin.
15. The use according to any one of the preceding claims wherein said heparin has a MW of 15 or 16 or 17 KDa.
16. The use according to any one of the preceding claims wherein said heparin is recombinant.
17. The use according to any one of the preceding claims wherein each linker molecule binds one molecule of heparin to said human plasma protein.
18. The use according to any one of the preceding claims wherein said linker is an amine linker and so links with amino groups on said heparin and plasma protein.
19. The use according to any one of the preceding claims wherein said linker conjugates with serine on the heparin chain and a lysine on the plasma protein.
20. The use according to any one of the preceding claims wherein said linker is a hetero-bi-functional cross-linker such as a 3-(2-Pyridyldithio)propionic acid N-hydroxysuccinimide ester (SPDP) linker or a homo-bi-functional cross-linker such as a 3,3’-Dithiodipropionicacid di(N-hydroxysuccinimide (NHS)-ester (DTSP) linker.

21. The use according to any one of the preceding claims wherein said APAC has a coupling level (CL) of 5 heparins per human serum albumin (HSA) and the linker used for the coupling is SPDP.