WHAT IS CLAIMED IS:

1. A method for treating Von Willebrand Disease or Hemophilia A in a subject in need thereof, the method comprising:

administering to the subject recombinant Von Willebrand Factor (rVWF) such that Factor VIII half-life is extended as compared to a subject administered plasma derived Von Willebrand Factor, wherein the rVWF is a high molecular weight VWF multimer composition comprising at least 20% VWF decamers or higher order multimers, and wherein the rVWF has a higher specific activity than plasma derived Von Willebrand Factor.

2. The method of claim 1, wherein the method comprises co-administering to the subject recombinant Von Willebrand Factor (rVWF) and recombinant Factor VIII (rFVIII).

3. The method of claim 2, wherein the rVWF and rFVIII are administered together in a single composition.

4. The method according to any one of claims 1 to 3, wherein the subject is administered between 1.0 IU/kg VWF:RCo and 150 IU/kg VWF:RCo per dose.

5. The method of claim 4, wherein the subject is administered between 2 IU/kg VWF:RCo and 50 IU/kg VWF:RCo per dose.

6. The method of claim 4, wherein the subject is administered between 5 IU/kg VWF:RCo and 40 IU/kg VWF:RCo per dose.

7. The method of claim 4, wherein the subject is administered between 10 IU/kg VWF:RCo and 20 IU/kg VWF:RCo per dose.

8. The method according to any one of claims 1 to 7, wherein the rVWF is matured in vitro by treatment with Furin.

9. The method according to any one of claims 1-8, wherein the rVWF is produced through expression in a Chinese Hamster Ovary (CHO cell culture).

10. The method according to claim 1-9, wherein the rFVIII and rVWF are produced through expression in the same cell culture.

11. The method according to any one of claims 1-10, wherein the subject is administered rVWF no more than once every other day.

12. The method of claim 11, wherein the subject is administered rVWF no more than twice a week.

13. The method according to any one of claims 1 to 12, wherein the high molecular weight VWF multimer composition maintains the at least 20% VWF decamers or higher order multimers for at least 3 hours post-administration.

14. The method according to any one of claims 1 to 13, wherein the Factor VIII half-life is extended by at least 5 hours.

15. The method of claim 14, wherein the Factor VIII half-life is extended by at least 12 hours.

16. The method of claim 14, wherein the Factor VIII half-life is extended by at least 24 hours.

17. The method of claim 14, wherein the Factor VIII half-life is extended by at least 36 hours.

18. The method of claim 14, wherein the Factor VIII half-life is extended by at least 48 or 72 hours.

19. The method of claims 2-18, wherein the ratio of FVIII procoagulant activity (IU FVIII:C) to rVWF Ristocetin cofactor activity (IU rVWF:RCo) administered to the subject is between 2:1 and 1:4.

20. The method of claim 19, wherein the ratio of FVIII procoagulant activity (IU FVIII:C) to rVWF Ristocetin cofactor activity (IU rVWF:RCo) administered to the subject is between 3:2 and 1:3.

21. The method of claim 19, wherein the ratio of FVIII procoagulant activity (IU FVIII:C) to rVWF Ristocetin cofactor activity (IU rVWF:RCo) administered to the subject is between 1:1 and 1:2.

22. The method of claim 19, wherein the ratio of FVIII procoagulant activity (IU FVIII:C) to rVWF Ristocetin cofactor activity (IU rVWF:RCo) administered to the subject is about 3:4.

23. The method of claims 1-22, wherein the rVWF has a specific activity of about 20-150 mU/µg.

24. The method of claims 1-23, wherein the high molecular weight VWF multimer composition comprises at least 30% VWF decamers or higher order multimers.

25. The method of claims 1-24, wherein the high molecular weight VWF multimer composition comprises at least 40% VWF decamers or higher order multimers.

26. The method of claims 1-25, wherein the high molecular weight VWF multimer composition comprises at least 50% VWF decamers or higher order multimers.

27. The method of claims 1-26, wherein the high molecular weight VWF multimer composition comprises at least 60% VWF decamers or higher order multimers.

28. The method of claims 1-27, wherein the high molecular weight VWF multimer composition comprises at least 70% VWF decamers or higher order multimers.

29. A method for treating Hemophilia A or Von Willebrand Disease in a subject in need thereof, the method comprising:

administering to the subject recombinant Von Willebrand Factor (rVWF) such that Factor VIII half-life is extended as compared to a subject administered plasma derived Von Willebrand Factor, wherein:

(a) the rVWF has a higher specific activity than plasma derived Von Willebrand Factor, wherein the specific activity of rVWF is about 20-150 mU/μg; and

(b) the FVIII half-life is at least 1.5 times higher as compared to FVIII half-life in a subject administered plasma derived Von Willebrand Factor.

30. A method for treating Hemophilia A or Von Willebrand Disease in a subject in need thereof, the method comprising:

administering to the subject recombinant Von Willebrand Factor (rVWF) such that Factor VIII half-life is extended as compared to a subject administered plasma derived Von Willebrand Factor, wherein:

(a) the rVWF is a high molecular weight VWF multimer composition comprising at least 20% VWF decamers or higher order multimers,

(b) the rVWF has a higher specific activity than plasma derived Von Willebrand Factor, wherein the specific activity of rVWF is at least about 20-150 mU/μg; and

(c) the FVIII half-life is at least 1.5 times higher as compared to FVIII half-life in a subject administered plasma derived Von Willebrand Factor.

31. The method of claims 1-30, wherein the method is a method for treating Von Willebrand Disease Type 3.

CLAIMS

1. Use of a recombinant Von Willebrand Factor (rVWF) and recombinant FVIII (rFVIII) in the manufacture of a medicament for treating Von Willebrand Disease,

wherein the rVWF is a high molecular weight VWF multimer composition comprising at least 20% VWF decamers or higher order multimers, wherein the rVWF is matured in vitro by treatment with Furin, wherein the ratio of rFVIII procoagulant activity (IU FVIII:C) to rVWF Ristocetin cofactor activity (IU rVWF:RCO) to be administered to the subject is between 2:1 and 1:4, and wherein the rVWF and rFVIII are to be administered together in an initial dose and then subsequent re-dosing is conducted with rVWF alone.

2. The use according to claim 1, wherein the rVWF has a specific activity of about 20-150 mU/µg, or about 30 to 120 mU/µg.

3. The use according to any one of claims 1 to 2, wherein the high molecular weight VWF multimer composition comprises at least 30% VWF decamers or higher order multimers, at least 40% VWF decamers or higher order multimers, at least 50% VWF decamers or higher order multimers, more preferably wherein the high molecular weight VWF multimer composition comprises at least 60% VWF decamers or higher order multimers, most preferably wherein the high molecular weight VWF multimer composition comprises at least 70% VWF decamers or higher order multimers.

4. The use according to any one of claims 1 to 3, wherein the subject is to be administered between 1.0 IU/kg VWF:RCo and 150 IU/kg VWF:RCo per dose, preferably wherein the subject is to be administered between 2 IU/kg VWF:RCo and 50 IU/kg VWF:RCo per dose, more preferred wherein the subject is to be administered between 5 IU/kg VWF:RCo and 40 IU/kg VWF:RCo per dose, very preferred wherein the subject is to be administered between 10 IU/kg VWF:RCo and 20 IU/kg VWF:RCo per dose.

5. The use according to any one of claims 1 to 4, wherein the rVWF is to be administered no more than once daily, no more than once every other day, no more than once every third day, no more than once every fourth day, no more than once every fifth day, no more than twice a week, no more than once a week, no more than once every two weeks, or no more than once a month.

6. The use according to any one of claims 1 to 5, wherein the rVWF is to be administered in multiple administrations.

7. The use according to any one of claims 1 to 6, wherein the ratio of FVIII procoagulant activity (IU FVIII:C) to rVWF Ristocetin cofactor activity (IU rVWF:RCo) to be administered is between 3:2 and 1:3, preferably wherein the ratio of FVIII procoagulant activity (IU FVIII:C) to rVWF Ristocetin cofactor activity (IU rVWF:RCo) to be administered is between 1:1 and 1:2, more preferably wherein the ratio of FVIII procoagulant activity (IU FVIII:C) to rVWF Ristocetin cofactor activity (IU rVWF:RCo) to be administered is about 3:4.

8. The use according to any one of claims 1 to 7, wherein the rVWF is produced through expression in a Chinese Hamster Ovary (CHO cell culture), preferably wherein the rFVIII and rVWF are produced through expression in the same cell culture.

9. The use according to any one of claims 1 to 8, wherein the rVWF and rFVIII are to be administered together in a single composition.

10. The use according to any one of claims 1 to 9, wherein the high molecular weight VWF multimer composition maintains the at least 20% VWF decamers or higher order multimers for at least 3 hours post-administration.

11. The use according to any one of claims 1 to 10, wherein the Factor VIII half-life is extended by at least 12 hours, preferably wherein the Factor VIII half-life is extended by at least 24 hours, more preferably wherein the Factor VIII half-life is extended by at least 36 hours, or most preferably wherein the Factor VIII half-life is extended by at least 48 or 72 hours.

12. The use according to any one of claims 1 to 11, wherein the FVIII half-life is at least 1.5 times higher as compared to FVIII half-life of plasma derived VWF when administered in said subject.

13. The use according to any one of claims 1 to 12, for treating Von Willebrand Disease Type 3.