WHAT IS CLAIMED IS:

1. A method of treating a disease, comprising administering to a subject in need thereof an effective amount of a substantially pure conjugate having at least one polymer moiety, a protein moiety, and a linker, wherein the at least one polymer moiety is attached to the linker, the nitrogen atom of the N-terminus of the protein moiety is bonded to the linker, the linker is a covalent bond, C_{1-10} alkylene, C_{2-10} alkenylene, or C_{2-10} alkynylene, and the protein moiety is an interferon-α moiety; the disease being idiopathic myelofibrosis, polycythaemia vera, or essential thromobocythaemia.

2. The method of claim 1, wherein the protein moiety is a modified interferon-α_{2b} moiety containing 1-4 additional amino acid residues at the N-terminus.

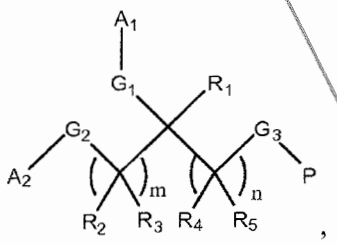
3. The method of claim 2, wherein the purity of the conjugate is 70% or higher.

4. The method of claim 1, wherein the disease is idiopathic myelofibrosis.

5. The method of claim 1, wherein the disease is polycythaemia vera.

6. The method of claim 1, wherein the disease is essential thromobocythaemia.

7. A method of treating a disease, comprising administering to a subject in need thereof an effective amount of a conjugate of formula I:



formula I

wherein

each of R_1, R_2, R_3, R_4, and R_5, independently, is H, C_{1-5} alkyl, C_{2-5} alkenyl, C_{2-5} alkynyl, aryl, heteraryl, C_{3-8} cycloalkyl, or C_{3-8} heterocycloalkyl;

each of A_1 and A_2, independently, is a polymer moiety;

each of G_1, G_2, and G_3, independently, is a bond or a linking functional group;

P is an interferon-α moiety;

m is 0 or an integer of 1-10; and

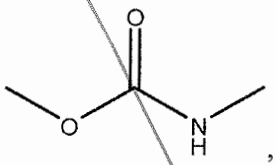
n is an integer of 1-10;

the disease being idiopathic myelofibrosis, polycythaemia vera, or essentia thromobocythaemia.

8. The method of claim 7, wherein G_3 is a bond and P is an interferon-α moiety in which the amino group at the N-terminus is bonded to G_3.

9. The method of claim 8, wherein each of A_1 and A_2 is an mPEG moiety having a molecular weight of 10-30 kD.

10. The method of claim 9, wherein each of G_1 and G_2 is



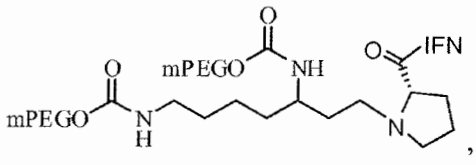
,

wherein O is attached to A_1 or A_2, and NH is attached to a carbon atom as shown in formula I.

11. The method of claim 10, wherein P is a modified interferon moiety containing 1-4 additional amino acid residues at the N-terminus.

12. The method of claim 11, wherein n is 2.

13. The method of claim 12, wherein the conjugate is



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in which mPEG has a molecular weight of 20 kD and IFN is an interferon-α_{2b} moiety.

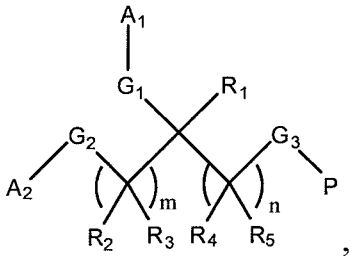
14. The method of claim 7, wherein the disease is idiopathic myelofibrosis.

15. The method of claim 7, wherein the disease is polycythaemia vera.

16. The method of claim 7, wherein the disease is essential thromobocythaemia.

WHAT IS CLAIMED IS:

1. The use of an effective amount of a conjugate of formula I:



formula I

wherein

each of R_1, R_2, R_3, R_4, and R_5, independently, is H, C_{1-5} alkyl, C_{2-5} alkenyl, C_{2-5} alkynyl, aryl, heteraryl, C_{3-8} cycloalkyl, or C_{3-8} heterocycloalkyl;

each of A_1 and A_2, independently, is a polymer moiety;

each of G_1 and G_2, independently, is a bond or a linking functional group;

G_3 is a bond;

P is an interferon-α moiety in which the amino group at the N-terminus is bonded to G_3;

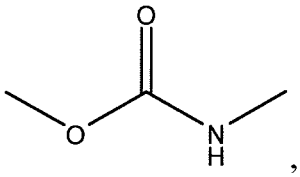
m is 0 or an integer of 1-10; and

n is an integer of 1-10;

in the manufacture of a medicament for the treatment of idiopathic myelofibrosis, polycythaemia vera, or essential thromobocythaemia.

2. The use of claim 1, wherein each of A_1 and A_2 is an mPEG moiety having a molecular weight of 10-30 kD.

3. The use of claim 1 or claim 2, wherein each of G_1 and G_2 is

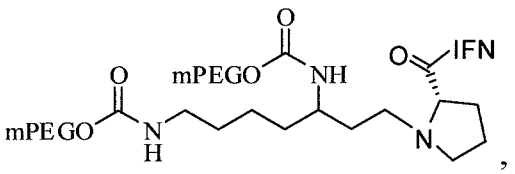


wherein O is attached to A_1 or A_2, and NH is attached to a carbon atom as shown in formula I.

4. The use of any one of claims 1 to 3, wherein P is a modified interferon moiety containing 1-4 additional amino acid residues at the N-terminus.

5. The use of any one of claims 1 to 4, wherein n is 2.

6. The use of any one of claims 1 to 5, wherein the conjugate is



in which mPEG has a molecular weight of 20 kD and IFN is an interferon-α_{2b} moiety.

7. The use of any one of claims 1 to 6, wherein the disease is idiopathic myelofibrosis.

8. The use of any one of claims 1 to 7, wherein the disease is polycythaemia vera.

9. The use of any one of claims 1 to 8, wherein the disease is essential thromobocythaemia.