CLAIMS

We claim:

1. A method for producing a biomolecule conjugate comprising the steps of
   activating the biomolecule by contact with an activating agent;
   removing the activating agent; and
   conjugating the biomolecule by reacting the biomolecule with an activated polymer;
   wherein the steps of the method are integrated into a single unit operation.

2. The method of claim 1, wherein the single unit operation is an integrated tangential flow filtration system.

3. The method of claim 1, further comprising the step of separating the biomolecule conjugate from unconjugated biomolecules.

4. The method of claim 3, wherein the biomolecule conjugate is separated from unconjugated biomolecules by size exclusion chromatography or ion exchange chromatography.

5. The method of claim 1, wherein the activating agent is selected from a buffer exchange, pH adjustment, or a reducing agent.

6. The method of claim 5, wherein the reducing agent is dithiothreitol or tris 2-carboxyethyl phosphine.

7. The method of claim 1, wherein the polymer is polyethylene glycol.

8. The method of claim 1, wherein the biomolecule is selected from proteins, polysaccharides, and nucleic acids.

9. The method of claim 8, wherein the protein is selected from coagulation factors, antibodies, hormones, growth factors, and enzymes

Claims

1. A method for producing a biomolecule conjugate comprising the steps of

   activating the biomolecule by contact with an activating agent;

   removing the activating agent; and

   conjugating the biomolecule by reacting the biomolecule with an activated polymer;

   wherein the steps of the method are integrated into a single unit operation, wherein the single unit operation is an integrated tangential flow filtration system, and wherein the polymer is polyethylene glycol and the biomolecule is a protein.

2. The method of claim 1, further comprising the step of separating the biomolecule conjugate from unconjugated biomolecules.

3. The method of claim 2, wherein the biomolecule conjugate is separated from unconjugated biomolecules by size exclusion chromatography or ion exchange chromatography.

4. The method of any one of claims 1 to 3, wherein the activating agent is selected from a buffer exchange, pH adjustment, or a reducing agent.

5. The method of claim 4, wherein the reducing agent is dithiothreitol or tris 2-carboxyethyl phosphine.

6. The method of any one of claims 1 to 5, wherein the protein is selected from coagulation factors, antibodies, hormones, growth factors, and enzymes.

7. A biomolecule conjugate produced according to the method of any one of claims 1 to 6.