CLAIMS

1. A method for isolating a protein of interest from nucleic acids and other host cell proteins present in cell culture supernatant comprising said protein, comprising:
   (a) first precipitating host cell proteins from the cell culture supernatant in the presence of 0.5% to 10% fatty acid;
   (b) subsequently combining said cell culture supernatant with 10-30% polyethylene glycol (PEG) at a pH of 5.0-8.5; and,
   (c) subsequently precipitating nucleic acids and protein impurities using calcium chloride;

   wherein the protein of interest is purified to at least 95% and the yield is at least 80%, without using chromatography.
2. The method of claim 1 wherein the concentration of PEG is 14% to 21%.
3. The method of claim 2 using 21% PEG.
4. The method of any one of claims 1-3 wherein the pH during precipitation in step b) is 7.
5. The method of any one of claims 1-4 wherein the temperature during precipitation in step b) is 4°C to 35°C.
6. The method of any one of claims 1-5 wherein precipitation of step b) is complete after 15 minutes.
7. The method of any one of claims 1-6 wherein equilibrium is reached in step b) after 30 to 60 minutes.
8. The method of any one of claims 1-7 wherein the PEG is selected from PEG2000, PEG4000, PEG6000 and PEG20000.
9. The method of any one of claims 1-8 wherein the fatty acid is caprylic acid.
10. The method of claim 9 wherein the concentration of caprylic acid is 5 to 200 mM.
11. The method of claim 9 wherein the concentration of caprylic acid is 1%.
12. The method of any one of claims 1-11 wherein the host cell proteins are precipitated in step (a) in a sodium citrate buffer.
13. The method of any one of claims 1-12 wherein the pH in step (a) is between 4.0 and 6.0.
14. The method of claim 13 wherein the pH is about 4.5.
15. The method of any one of claims 1-14 wherein the protein of interest is an antibody.
16. The method of claim 15 wherein the antibody is IgG.

17. The method of any one of claims 1-16 further comprising an additional precipitation step including cold ethanol following step c).
18. An apparatus for carrying out a method of any one of claims 1-17, the apparatus comprising a column-free tubular reactor providing a precipitation area suitable for continuous operation of said method.