What is claimed is:

1. A method for identifying at least one ~~dimer~~heterodimer species of a first protein and a second protein in a co-formulated preparation of at least two proteins including said first protein and said second protein, said method comprising:

(a) contacting a sample ~~including~~comprising the ~~dimer~~co-formulated preparation of at least two proteins, including the heterodimer species, to a chromatographic system having a size-exclusion chromatography resin;

(b) washing said size-exclusion chromatography resin using a mobile phase to provide an eluent including ~~the dimer~~at least one heterodimer species; and

(c) identifying ~~the dimer~~said at least one heterodimer species in said eluent using an electrospray ionization mass spectrometer under native conditions~~.~~,

~~2. The method of claim 1, wherein the electrospray ionization mass spectrometer is coupled online to the chromatographic system having the size-exclusion chromatography resin.~~

~~3~~wherein said chromatographic system is coupled online to said mass spectrometer to allow fluid communication between said mass spectrometer and said chromatographic column, wherein at least one splitter with at least three paths is used to couple said chromatographic system with said mass spectrometer and with an ultraviolet detector.

2. The method of claim 1, wherein the electrospray ionization mass spectrometer is a nano-electrospray ionization mass spectrometer.

~~4. The method of claim 1, wherein at least one splitter with at least three paths is used to allow fluid communication with the electrospray ionization mass spectrometer and the chromatographic system having the size-exclusion chromatography resin.~~

~~5. The method of claim 1, wherein at least one splitter with at least three paths is used to allow fluid communication between an ultraviolet detector to the chromatographic system having the size-exclusion chromatography resin.~~

~~6. The method of claim 5~~3. The method of claim 1, wherein the eluent from washing the size-exclusion chromatography resin is introduced in the ultraviolet detector through the at least one splitter at a flow rate of ~~about~~from 0.2 mL/min to ~~about~~ 0.4 mL/min.

~~7~~4. The method of claim 1, wherein the mobile phase used to wash the size-exclusion chromatography resin comprises ammonium acetate.

~~8~~5. The method of claim 1, wherein the mobile phase used to wash the size-exclusion chromatography resin comprises a volatile salt.

~~9~~6. The method of claim 1, wherein the mobile phase used to wash the size-exclusion chromatography resin has a flow rate of ~~about~~from 0.2 mL/min to ~~about~~ 0.4 mL/min.

~~10~~7. The method of claim 1, wherein an amount of the sample including the dimer species contacted to the chromatography system is ~~about~~from 10 µg to ~~about~~ 100 µg.

~~11~~8. The method of claim 1, wherein the eluent provided from washing the size-exclusion chromatography resin is introduced in the electrospray ionization mass spectrometer, wherein a flow rate of electrospray from the electrospray ionization is ~~about~~from 10 nL/min to ~~about~~ 50 nL/min.

~~12~~9. The method of claim 1, wherein ~~the eluent provided from washing the size-exclusion chromatography resin is introduced in the~~a spray voltage of said electrospray ionization ~~mass spectrometer, wherein a spray voltage of electrospray~~ is about 0.8 kV to about 1.5 kV.

~~13.~~ 10. The method of claim 1, wherein the sample comprises at least two ~~dimer~~heterodimer species.

~~14.~~ 11. The method of claim 1, wherein the sample comprises a homodimer species.

~~15. The method of claim 1, wherein the sample comprises a heterodimer species.~~

~~16. The method of claim 1, wherein the sample is obtained from a co-formulated preparation.~~

~~17~~12. The method of claim 1, wherein said first protein and said second protein are selected from a group consisting of a therapeutic antibody, a monoclonal antibody, a polyclonal antibody, a bispecific antibody, an antibody fragment, a fusion protein, and combinations thereof.

13. A system comprising:

(a) a chromatographic column having a size-exclusion chromatography resin, wherein the chromatographic column is ~~capable of receiving a mobile phase and a sample~~

~~including a protein~~configured to analyze a sample comprising a co-formulated preparation of at least two proteins, including a heterodimer species, by a size-exclusion chromatography method, and

(b) an electrospray ionization mass spectrometer, wherein the electrospray ionization mass spectrometer is ~~capable of being~~ coupled online to said chromatographic column to allow fluid communication between said mass spectrometer and said chromatographic column, and wherein the electrospray ionization mass spectrometer is capable ~~of being run under native~~electrospray ionization of a sample in conditions~~.~~ that do not denature proteins in said sample,

~~18. The system of claim 17,~~ wherein ~~the~~at least one splitter with at least three paths is used to couple said chromatographic column ~~is capable of being coupled to the~~with said mass spectrometer ~~using a splitter.~~

~~19. The system of claim 17, wherein the chromatographic column is further capable of being coupled to~~and with an ultraviolet detector ~~using a splitter with at least three paths~~.

~~20~~14. The system of claim ~~17~~13, wherein the electrospray ionization mass spectrometer is a nano-electrospray ionization mass spectrometer.

~~21. A method for quantifying a heterodimer species in a sample comprising a first protein and a second protein, said method comprising:~~

~~immobilizing an antibody specific to the first protein on a solid surface;~~

~~incubating the sample with said antibody;~~

~~capturing a precipitated sample;~~

~~collecting a flow through;~~

~~treating the precipitated sample with a first compound;~~

~~treating the flow through with a second compound;~~

~~mixing the treated precipitated sample and at least a portion of the treated flow through to form a mixture; and~~

analyzing the mixture using a liquid chromatography coupled to a mass spectrometer to quantify the heterodimer species in the sample.

22. The method of claim 21, wherein the mass spectrometer is a tandem mass spectrometer.

23. The method of claim 21, further comprising adding a reducing agent to the precipitated sample.

24. The method of claim 21, further comprising adding a reducing agent to the flow through.

25. The method of claim 21, further comprising digesting the mixture prior to analyzing the mixture.

25. The method of claim 21, further comprising deglycosyalting the mixture prior to analyzing the mixture.

27. The method of claim 21, wherein the treated precipitated sample and about 10% of the treated flow through is mixed to form the mixture.

28. The method of claim 21, wherein the first compound is an isotope of the second compound.

29. The method of claim 28, wherein the first compound is iodoacetamide.

30. The method of claim 21, wherein the first protein is an antibody.

31. The method of claim 21, wherein the first protein is a monoclonal antibody.

32. The method of claim 21, wherein the first protein is a polyclonal antibody.

33. The method of claim 21, wherein the second protein is a fusion protein.

34. The method of claim 21, wherein the sample is stressed by subjecting it to a condition selected from a group consisting of cool-white light exposure, hydrogen peroxide exposure, ultraviolet light exposure, heat, or combinations thereof.

~~35. The method of claim 21, where the sample is obtained from a co-formulated preparation.~~

~~36. A method for quantifying a heterodimer species, said method comprising:~~

~~immunoprecipitating the heterodimer species; and~~

~~quantifying the heterodimer species by using a stable isotope labeling method followed by a liquid chromatography coupled to a mass spectrometer.~~