

We claim:

1. An aqueous electrophoresis sample buffer, comprising:

155 to 175 mM 2-iodoacetamide;

0.50 to 1.5% lithium dodecyl sulfate; and

75 to 95 mM sodium phosphate,

wherein the aqueous electrophoresis sample buffer has a pH of less than 7.

2. The aqueous buffer of claim 1, wherein the pH is 6.
3. The aqueous buffer of claim 1 or 2, comprising 166 mM 2-iodoacetamide, 0.81% lithium dodecyl sulfate, and 81 mM sodium phosphate.
4. An aqueous electrophoresis sample buffer, consisting of:

166 mM 2-iodoacetamide,

0.81 % lithium dodecyl sulfate, and

81 mM Sodium phosphate,

wherein the aqueous electrophoresis sample buffer has a pH of 6.0.

5. A method for identifying contaminants or impurities in a protein drug sample, the method comprising the steps of:

adding the protein drug sample to the buffer comprising 155 to 175 mM 2-iodoacetamide, 0.50 to 1.5% lithium dodecyl sulfate and 75 to 95 mM sodium phosphate, wherein the aqueous electrophoresis sample buffer has a pH of less than 7, to form a buffered protein drug sample;

heating the buffered protein drug sample to 65 to 85°C for 5 to 15 minutes to form a denatured buffered protein drug sample;

adding a detectable label to the denatured buffered protein drug sample and heating it at 30 to 40 °C for 20 to 40 minutes to form a denatured labeled protein drug sample;

diluting the denatured labeled protein drug sample and subjecting it to microchip capillary electrophoresis to separate the diluted protein drug sample on a microchip capillary electrophoresis system to produce an electropherogram; and

identifying peaks in the electropherogram corresponding to contaminants or impurities.

6. The method of claim 5, wherein the buffered protein drug sample is heated at 70°C for 10 min.
7. The method of claim 5 or 6, wherein the labeled protein drug sample is heated at 35°C for 30 minutes.
8. The method of any one of claims 5-7, wherein the diluted protein drug sample is 9 µg/ml.
9. A kit comprising the buffer according to any one of claims 1-4, and written instructions for preparing a sample for electrophoresis in the buffer.
10. An aqueous electrophoresis sample buffer, comprising:
 - 55 to 75 mM 2-iodoacetamide;
 - 0.1 to 1.0 % lithium dodecyl sulfate;
 - 5 to 115 mM sodium chloride, and
 - 5 to 85 mM HEPES,wherein the aqueous electrophoresis sample buffer has a pH of less than 9.
11. An aqueous electrophoresis sample buffer, comprising:
 - 66.4 mM 2-iodoacetamide;
 - 0.32% lithium dodecyl sulfate;
 - 48.6 mM NaCl, and

16.2 mM HEPES,

wherein the aqueous electrophoresis sample buffer has a pH of less than 9.

12. The aqueous buffer of claim 10 or 11, wherein the pH is 8.
13. The method of claims 5-8, wherein the detectable label is DY-631 N-hydroxysuccinimidyl ester.
14. The method of claims 5-8 and 13, wherein the aqueous electrophoresis sample buffer has a pH of 6.
15. The method of claim 5-8, 13 and 14, wherein the aqueous electrophoresis sample buffer comprises 166 mM 2-iodoacetamide, 0.81% lithium dodecyl sulfate, and 81 mM sodium phosphate.
16. A method for identifying contaminants or impurities in a protein drug sample, the method comprising the steps of:

adding the protein drug sample to the buffer comprising 55 to 75 mM 2-iodoacetamide, 0.1 to 1.0% lithium dodecyl sulfate, 5 to 115 mM sodium chloride, and 5 to 85 mM HEPES, wherein the aqueous electrophoresis sample buffer has a pH of less than 9, to form a buffered protein drug sample;

heating the buffered protein drug sample to 65 to 85°C for 5 to 15 minutes to form a denatured buffered protein drug sample;

adding a detectable label to the denatured buffered protein drug sample and heating it at 30 to 40°C for 20 to 40 minutes to form a denatured labeled protein drug sample;

diluting the denatured labeled protein drug sample and subjecting it to microchip capillary electrophoresis to separate the diluted protein drug sample on a microchip capillary electrophoresis system to produce an electropherogram; and

identifying peaks in the electropherogram corresponding to contaminants or impurities.
17. The method of claim 16, wherein the buffered protein drug sample is heated at 70 °C for 10 min.
18. The method of claims 16 or 17, wherein the labeled protein drug sample is heated at 35°C for 30 minutes.

19. The method of any one of claims 16-18, wherein the diluted protein drug sample is 9 µg/ml.

20. A kit comprising the buffer according to any one of claims 10-12, and

written instructions for preparing a sample for electrophoresis in the buffer.