

Both components were blended in a 1:1 (w/w) ratio and six (6) grams were dissolved in 100 mL of a buffer containing 0.5M Tris and 0.4M boric acid at pH 8.5. The viscosity of the resulting solution at 75° C. was within the range of 400–600 mPa's. In addition the resulting agarose blend had both low gelling (24°–28° C.) and remelting (65°–70° C.) temperatures enabling manageable gel casting and preparative procedures for protein recovery.

EXAMPLE 17

Preparation of a Resolving Gel Composition (all components depolymerized)

Component 1 was prepared by exposing 1,2-dihydroxypropyl agarose powder (glycerated agarose, described in Example 1 of previously cited U.S. Pat. No. 4,312,727) to gamma irradiation of 600 mR. This treatment reduced the viscosity of a 3% solution to 30–40 mPa's at 75° C.

Component 2 was prepared by exposing hydroxy-C₂-4-alkoxyl agarose powder (SeaPlaque® a product of FMC Corporation, BioProducts Group, Rockland, Me. 04841, U.S.A.) to gamma irradiation of 600 mR. This treatment reduced the viscosity of a 3% solution to 30–40 mPa's at 75° C.

Both components were blended at a 1:1 (w/w) ratio and six (6) grams were dissolved in 100 mL of a buffer containing 0.5M Tris and 0.4M boric acid at pH 8.5. The viscosity of the resulting solution at 75° C. was within the range of 400–600 mPa's. In addition the resulting agarose blend had both low gelling (24°–28° C.) and remelting (65°–70° C.) temperatures enabling manageable gel casting and preparative procedures for protein recovery.

EXAMPLE 18

Preparation of a Resolving Gel Composition (three components, one depolymerized)

Component 1 was prepared by exposing hydroxy-C₂-4-alkoxylated agarose powder (SeaPlaque®, a product of FMC Corporation, Bioproducts Group, Rockland, Me. 04841, U.S.A.) to gamma irradiation of 600 mR. This treatment reduced the viscosity of a 3% solution to 30–40 mPa's at 75° C.

Component 2 was 1,2-dihydroxy-propyl agarose (glycerated agarose, described in Example 1 of previously cited U.S. Pat. No. 4,312,727).

Component 3 was carboxymethyl agarose which was prepared by reacting agarose with monochloroacetic acid in the presence of sodium hydroxide, as described in Example 2 of U.S. Pat. No. 3,507,851.

All three components were blended in a 1:1:1 (w/w) ratio and six (6) grams were dissolved in 100 mL of a buffer containing 0.5M Tris and 0.4M boric acid at pH 8.5. The viscosity of the resulting solution at 75° C. was within the range of 400–600 mPa's. In addition the resulting agarose blend had both low gelling (24°–28° C.) and remelting (65°–70° C.) temperatures enabling manageable gel casting and preparative procedures for protein recovery.

We claim:

1. An aqueous electrophoretic resolving gel composition comprising:

- (A) two hydrogels, at least one of which has been derivatized and, independently, at least one of which has been depolymerized sufficiently to reduce the casting-effective viscosity of the total resolving gel composition; other than a combina-

tion of (i) hydroxyethyl agarose which was subsequently depolymerized and (ii) 1,2-dihydroxypropyl agarose;

(B) water; and

(C) a resolving gel buffer.

2. An electrophoretic discontinuous stacking gel system comprising:

(I) a resolving gel composition comprising;

(A) one or more thermo- and/or pH- reversible hydrogels, at least one of which has been derivatized and, independently, at least one of which has been depolymerized sufficiently to reduce the casting-effective viscosity of said resolving gel composition;

(B) water;

(C) a resolving gel buffer; and

(D) optionally, about 1–5 % w/w of said resolving gel, of at least one low molecular weight polyol; in electrophoretic-gel-operative combination with:

(II) a superposed or adjacent stacking gel which is discontinuous from said resolving gel as to at least one of: pore size, ionic strength, ionic composition, or pH, comprising:

(A) one or more derivatized or native thermo- and/or pH- reversible hydrogels;

(B) water; and

(C) a stacking gel buffer.

3. The compositions of any one of preceding claims 1, or 2 wherein each said hydrogel is a polysaccharide.

4. The compositions of any one of preceding claims 1, or 2 wherein each said hydrogel is agar, agarose, alginate, carrageenan, curdlan, gellan, Konjac, pectin, pululan, or a hydrogel formed by the combination thereof with either another polysaccharide or a non-polysaccharide polymer which associates firmly with the gel-forming polymers so that it does not significantly dissociate under electrophoretic conditions.

5. The compositions of any one of preceding claims 1, or 2 wherein each said hydrogel is an agarose.

6. The compositions of any one of preceding claims 1, or 2 wherein at least two said hydrogels are present in said resolving gel.

7. The compositions of any one of preceding claims 1, or 2 wherein said resolving gel hydrogels are one or more of:

(a) hydroxyalkoxylated agarose,

(b) dihydroxyalkyl agarose, or

(c) native agarose

in which where a derivatized agarose, it has been depolymerized either before or after its derivatization.

8. The compositions of any one of preceding claims 1, or 2 wherein said resolving gel hydrogels are a mixture of

(a) hydroxy-C_{2,4}-alkoxylated agarose, and

(b) 1,2-dihydroxypropyl agarose, at least one of which has been depolymerized before its derivatization.

9. The compositions of claim 7 wherein the weight ratio a:b is 1:11–9.

10. The composition of claim 9 wherein the weight ratio a:b is about 1:1.

11. The compositions of any one of preceding claims 1, or 2 wherein said resolving gel hydrogels are a mixture of

(a) hydroxy-C_{2,4}-alkoxylated agarose, and