

EXAMPLE 8

A hot solution of 6 g. of agarose in 225 ml. of water was cooled to 50°C. and made strongly alkaline by the addition of 100 ml. of 3.75M sodium hydroxide solution. No sodium borohydride was used for color improvement. The mixture quickly turned yellow, and darkened rapidly. It was treated with 5 ml. of dimethyl sulfate and held at 50°C. for an additional hour, by which time, it was an intense greenish color. Neutralization with 3M acetic acid caused a lightening of the color to brown, then a deep rose. Isolation of the product by alcohol precipitation resulted in much of the color's dissolving in the mother liquor, but the product still had a pinkish brown color after washing and drying. The gelling temperature of the product was 31°C., a reduction of 5.5°C. from the starting material. A 1% gel prepared from this material was much clearer than a similar one made from the parent agarose, but had a definite pinkish-gray color. Nonetheless, it is clear that the end group reduction step may be omitted in the preparation of derivatives as disclosed herein.

EXAMPLE 9

A solution of 6 g. of agarose (gelling temperature, 36.5°C.) in 225 ml. of water was held at 80°C., treated with 0.35 g. of sodium borohydride for 10 minutes, made strongly alkaline with 100 ml. of 3.75M sodium hydroxide, held for 2 hours, and then reacted with epichlorohydrin (0.50 ml.) for an additional 2 hours. The mixture was cooled, neutralized, and the dihydroxypropylated product was obtained and washed as in the preceding examples. It had a gelling temperature of 34.3°C., which is a lowering of 2.2° from the original material.

What is claimed is:

1. A modified agarose containing additional groups substituted therein selected from the group consisting of alkyl and alkenyl groups each containing from 1 to 3 carbon atoms and hydroxyalkyl groups each containing from 1 to 4 carbon atoms, the increased degree of substitution above the corresponding unmodified agarose being from about 0.01 to about 1.0, said modified agarose being water-soluble and having a gelling temperature at least 1°C. lower than the gelling temperature of the corresponding unmodified agarose.

2. A modified agarose as claimed in claim 1 containing hydroxyl groups in place of the terminal aldehyde groups present in the corresponding unmodified agarose.

3. A modified agarose as claimed in claim 2 in which the additional groups substituted therein are methyl.

4. A modified agarose as claimed in claim 2 in which the additional groups substituted therein are hydroxyethyl.

5. A modified agar containing additional groups substituted therein selected from the group consisting of alkyl and alkenyl groups each containing from 1 to 3 carbon atoms and hydroxyalkyl groups each containing from 1 to 4 carbon atoms, the increased degree of substitution above the corresponding unmodified agarose being from about 0.01 to about 1.0, said modified agar being water-soluble and having a gelling temperature at least 1°C. lower than the gelling temperature of the corresponding unmodified agar.

6. A modified agar as claimed in claim 5 containing hydroxyl groups in place of the terminal aldehyde groups present in the corresponding unmodified agar.

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