Preservation of flat acrylamide electrophoresis gels

Workers in the field of starch gel electrophoresis have frequently wished to preserve their original gels even though it is possible to take good photographs of the results. In 1963 DANGERFIELD AND FAULKNER[1] and BAUR[2] independently described techniques for preservation and these were subsequently modified by them[3,4]. We have found that the procedure so described has worked well and has been useful in the classroom as well as in the research laboratory. Nevertheless the procedure appears not to have come into general use. With the advent of acrylamide electrophoresis where flat layers of this material have been used to replace the starch, often in the same equipment, the problem has again arisen and we have found that the DANGERFIELD–BAUR technique is equally valuable. However, as some minor modifications are required to ensure success we are describing the new procedure.

The stained and washed gel is submerged in an aqueous solution containing 10–15% glycerol and about 5% acetic acid; the glycerol was originally added to render the starch transparent but we find a better result is obtained even though the acrylamide is initially clear probably due to the nature of the dialysis membrane used in the procedure. Two sheets of Visking dialysis membrane, about 4 cm longer and wider than the gel, are also submerged in this solution and the whole left for 1–2 h. Five sheets of filter paper, similar in dimensions to the Visking membrane, are laid flat, one membrane sheet is removed, blotted and placed on the paper sheets. The gel is then placed centrally on the membrane leaving about 2 cm of membrane exposed all round the gel. The second membrane sheet is placed on top of the gel, all air bubbles are gently brushed out and a further five sheets of paper placed on top. The whole is clamped along the edges with long-jawed spring or bulldog clips ensuring that the longer dimension is held firm. Diffusion occurs rapidly through the membrane to the surface of the paper and evaporation then takes place; this can be hastened by blowing air from a cold fan over the horizontal sandwich and, by turning it over from time to time, completely even drying results in about 24–48 h. The membrane appears to be available in different thicknesses in different countries and the thinner membrane works more efficiently and rapidly. The dried gel, still held within the membrane sheets, remains as a thin rigid sheet which can be stored indefinitely although it tends to curl when left out in an atmosphere of changing humidity.

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