

Method for the preservation of polyacrylamide slabs after electrophoresis

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DRYING is well known as a means of preservation after electrophoresis for agar gels. With starch and polyacrylamide gels, simple drying leads to shrinkage, distortion, curling and cracking, and an extremely brittle product. Various ways have been tried to prevent this happening. Baur (1963) and Dangerfield and Faulkner (1963) developed fairly elaborate methods for starch gel, involving pre-treatment with glycerol-acetic acid solutions, and these have been adapted for use with acrylamide gels (Smith and Weiss, 1967). There is said to be no shrinking. Wieme (1965) described a method which requires that the acrylamide be first covered with a layer of agar gel. The method described here is completely independent. It is simple and yields a tough, readily handled product, although considerable shrinkage occurs.

Protein samples were subjected to electrophoresis in horizontal slabs of polyacrylamide gel (Boyde, 1968; 5 per cent gel, 5 per cent crosslinked), stained in naphthalene black 12B (BDH) 0.1 per cent in methanol : water : acetic acid :: 50 : 50 : 10 v/v, overnight, and differentiated by soaking successively in running tapwater (6-8 h), methanol - water - acetic acid as above (overnight), and running tapwater again for several hours (Boyde,

1969). If any background colour remained the above alternation of eluting solvents was repeated. There is no reason to suppose that other staining and differentiating procedures would not work equally well. The gel was then placed in a flat tray, sprinkled with an approximately equal weight of Aquacide I, II or III (Calbiochem) and left on the bench overnight, by which time it had shrunk almost to the full extent finally observed. To complete the process, the gel was briefly washed and then dried overnight in an oven at 50°C. Slight buckling or curling of the preparation was sometimes observed. This was eliminated, if objectionable, by soaking the preparation briefly in water to soften it and again drying in an oven at 37°C, under weights.

Thus treated, gels shrink to 40 per cent of their original linear dimensions, apparently equally in all directions. The final form is a white, opaque, hard block, not dissimilar in texture to white "perspex" sheet. The stained protein zones show up clearly against this background and are more easily seen than in a transparent gel. The original form of the gel, with full transparency, can be recovered at any time by soaking in water. The preparation can be handled for close study without detriment, stored without special precautions, and shows no sign of absorbing moisture from the air in the moderate to high humidities experienced in Kampala. Further experience has shown that the preparation does soften when exposed to humidities approaching 100 per cent (during the rains at Mombasa, Kenya; an additional study will be required to determine the limits of this phenomenon, which may have a wider significance and some usefulness). Slight buckling of the preparation has been observed during storage under more normal conditions; this can be eliminated at any time, as described above. Smith and Weiss (1967) report similar buckling during storage of their preparations, and attribute this to varying humidity.

It is hoped that the advantages of this technique will make it useful to colleagues who employ polyacrylamide gel slab electrophoresis. The major disadvantage is that the product is opaque and therefore unsuitable for photometric scanning by transmitted light.

M.A.R. thanks the Medical Research Council, London, for support as a part-time research technician, during the period of the work.

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