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Gel Removal in Electrophoresis

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NOTE

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One of the most painstaking and time-consuming tasks involved in polyacrylamide disk electrophoresis is removing the gel from the glass tube. The problem becomes especially acute when high percentage (greater than 20%) acrylamide gels are used. Such gels are not only extremely stiff but also quite brittle and easily scratch or break.

We have had success with a simple but highly efficient system for gel removal (Fig. 1). It could prove quite useful for laboratories dealing with large numbers of samples; perhaps even rapid enough for clinical use. A 18-mm × 6-mm vacuum hose 6 cm long is connected to the air outlet (which delivers approximately 50 psig) with a hose clamp. The other end of the hose is connected to an air valve. A second valve allows more precise control of the air pressure. A piece of similar vacuum tubing 10 cm in length is clamped to the opposite end of the second air valve. A 1/8-in. hole is drilled about 4 cm from the exposed end of this hose. A finger adjustable hose clamp is fitted over the exposed end.

A water tub (45 cm × 25 cm) filled 15 cm high with water is placed near the air pressure apparatus. The primary air valve is opened, and a glass gel tube can be clamped 1/2 cm inside the vacuum hose (for gel concentrations less than 20% such clamping is unnecessary). The thumb is placed over the 1/8-in. hole in the tube as the secondary air valve is opened and the pressure adjusted only to the point where the gel begins to move.

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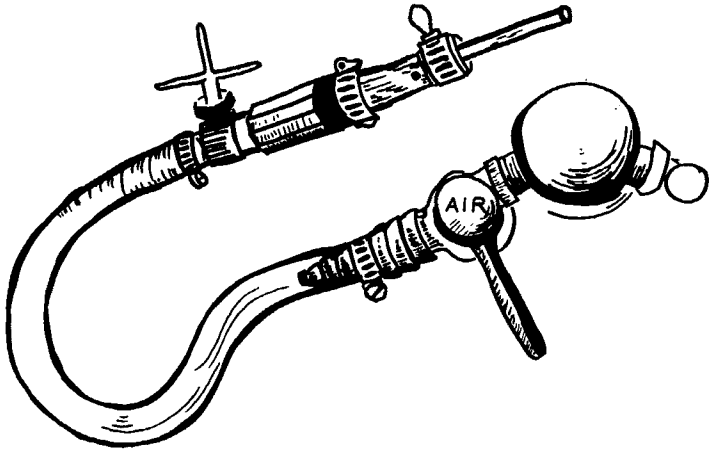

FIG. 1. Apparatus for rapid removal of acrylamide gels. (Sketch by Carla Abrahamson.)

When only a 2-cm section of the gel remains in the tube, the secondary air valve is turned as low as possible. By manipulating the thumb over the 1/8-in. hole, one allows the gel to gently slide into the water bath. Gel removal from the tube can be facilitated by use of a screen. Scribing around the inside of the glass tube and gel, about 0.5 cm, and addition of water to this end of the gel will free most stubborn gels. An experienced operator can easily remove thirty (6 cm) gels in 5 min.

As suggested by Och (*2*), we have found that gels can be removed most easily if the gel tubes are soaked in chromic acid cleaning solution after they have been cleaned to remove the last traces of acrylamide clinging to the side.

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