

THE USE OF E-20 RED RESIN FOR CASTING ANATOMICAL CAVITIES

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The first recorded example of the casting of anatomical cavities was that of Leonardo da Vinci (1452 - 1519). Molten wax was used to cast the ventricles of the brain. By doing so da Vinci developed a new dimension in the study of anatomical cavities by filling them with a solidifying agent.

Looking at Biodur E20 resin in comparison to wax, we find that they have common characteristics. They both solidify, but more important for the technician, is the fact that heat plays a role in the consistency of these products.

When cold, E20 has a high viscosity. At room temperature it has the consistency of honey and at 50°C it pours like water. Using this phenomenon one can inject micro anatomical cavities.

AIM:

The aim of this method is to produce a corrosion cast of the glomeruli of the kidneys of a rat.

METHOD:

The abdominal aorta was blocked distally to the kidneys by tying surgical silk tightly around it. A

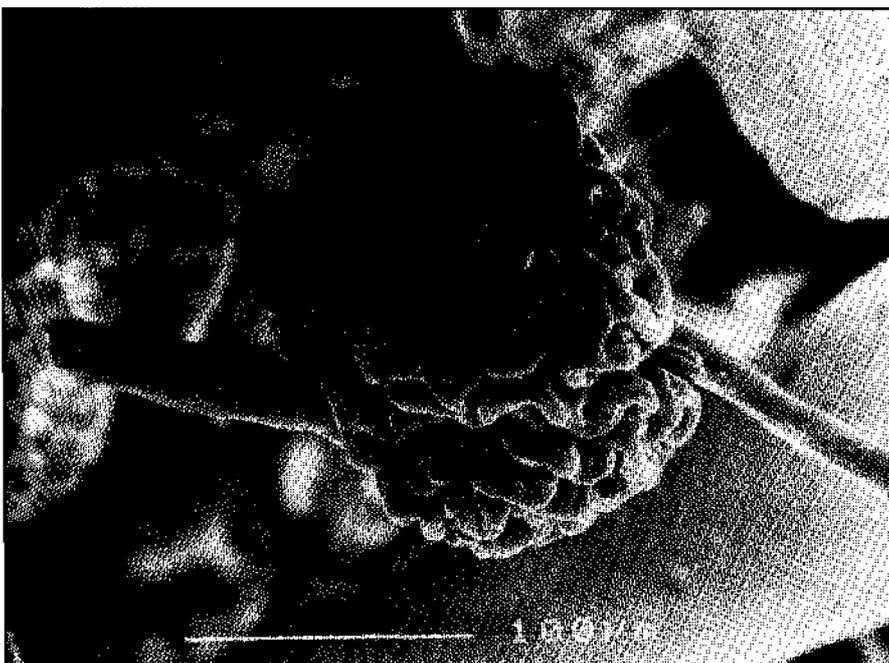
canula was inserted into the thoracic aorta and the blood was washed out of the kidneys using saline solution with heparin.

The rat was submerged in a water bath at 50°C for \pm 20 minutes. A beaker containing the E20 was standing in a water bath at the same temperature.

Injection of E20 was completed using a 10cc syringe (preheated) until the kidneys were visibly full. One important point to remember is that by heating the resin the setting time is reduced dramatically. No time should be wasted after mixing the catalyst with the resin. After curing of the resin the soft tissue was removed (macerated) with KOH (4%) and studied with a scanning electron microscope.

The glomeruli were completely filled with E20, and the arteries and veins were clearly visible.

In conclusion we found E20 resin an exceptionally suitable resin to study the ultrastructure of anatomical cavities.



A scanning electron micrograph of a glomerulus of a rat kidney fitted with E20 resin. (X470)