13122

Delayed Blood Coagulation in Methyl Methacrylate (Boilable "Lucite")* Vessels.

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The inhibition of blood coagulation by a plastic resin surface was demonstrated by Neubauer and Lampert.[1] They used a product chemically similar to bakelite which they called "athrombit" and showed that it was superior to paraffin in its ability to delay coagulation. Methyl methacrylate, one of the newer plastic resins, in addition to the properties which make it suitable as a substitute for glass, also possesses an anticoagulant surface.

The anticoagulant power of a surface is usually inversely proportional to the force of adhesion exerted between the surface and water.[2] Methyl methacrylate resin possesses a very pronounced water-repelling surface. The force of adhesion between it and water, when measured by the capillary tube method,[3] is 0.038 g per cm. This is not as low as the paraffin-water nor as high as the glass-water adhesive forces. These are –0.037 g per cm and 0.053 g per cm respectively. Table I presents a comparison of the anticoagulation property of glass, methyl methacrylate and paraffin. The average coagulation time for the series of glass tubes was 6.2 min, the methyl methacrylate tubes 13.9 min and the paraffin tubes 18.3 min. It is evident that the anticoagulant behavior of the methyl methacrylate surface follows Lampert's rule of surface adhesion. In this respect it differs from "athrombit"[2] and collodion.[3]

Clot retraction was delayed in the methyl methacrylate tubes and in some instances did not take place even after standing 24 hours at room temperature.

The tubes used in this experiment had an internal diameter of 1 cm. Two cc of human blood, removed with a dry syringe from the veins of healthy adults, were placed in each tube and the coagulation time was taken when the blood failed to flow upon tilting the tube to the horizontal position.

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* Supplied for this experiment by E. I. du Pont de Nemours and Company.

1 Neubauer, O., and Lampert, H., *Muench. Med. Wchnschr.*, 1930, **77**, 582.

2 Lampert, H., *Die physikalische Seite des Blutgerinnungs-problems*, 1931, Leipzig, Georg Thieme.

3 Hirschboeck, J. S., PROC. SOC. EXP. BIOL. AND MED., 1940, **45**, 122.

TABLE I.
Coagulation Time of Blood.

Case	Type of surface: Glass min	Methyl methacrylate min	Paraffin min
1	7	13	10
2	9	20	27
3	5	9	11
4	5	12	18
5	5	11	19
6	5	14	16
7	7	19	16
8	6	12	18
9	6	11	22
10	7	18	26

Summary. The blood coagulation time in methyl methacrylate (boilable "lucite") tubes was found to be twice as long as the coagulation time in glass tubes. The blood coagulation inhibiting effect of this material follows Lampert's rule of surface adhesion.

13123

Cleavage of the Imidazole Ring of Histidine and Carnosine by Bromine.*

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The literature records no chemical reagent capable of rapidly splitting the imidazole ring of histidine with the liberation of ammonia. This cleavage is readily accomplished by an enzyme, histidase, found in liver.[1, 2] The following data show that a buffered solution of bromine rapidly splits the imidazole ring of histidine, carnosine and other imidazole compounds.

Experimental Procedure. A citrate buffer solution is prepared by dissolving 352.8 g of $Na_3C_6H_5O_7 \cdot 2H_2O$ in ammonia-free water to a final volume of 1200 cc. The pH is adjusted to 1.0 (glass electrode) by adding approximately 315 cc of C. P. HCl, sp gr 1.18.

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1 Edlbacher, S., and Kraus, J., *Z. Physiol. Chem.*, 1930, **191**, 225; 1931, **195**, 267.

2 Edlbacher, S., and Neber, M., *Z. Physiol. Chem.*, 1934, **224**, 261.