

solution is evidently a favorable medium for the preservation of these blood constituents.

Fading and disintegration of the red blood cells and fragmentation and degeneration of the platelets, which are the usual sources of error in current direct methods of blood examinations, are essentially eliminated when Ringer-heparin solution is used as the diluting fluid. Platelets were not found to adhere to clean pipettes, and dirty pipettes influence the red even more than the platelet counts. By the time the red cell count is made, the platelets will be found to have settled sufficiently so that they may be counted immediately with the low power lens.

The use of this procedure for platelet counts which involves no change in the usual routine of red cell counts, has demonstrated its superiority over other methods in that accurate determinations are rapidly obtained within the time limits of a red count.

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The Fate of Foreign Sugars in the Blood Stream.

ELLA H. FISHBERG AND B. T. DOLIN.

From the Chemical Laboratory of Beth Israel Hospital, New York City.

The recent development (Somogyi¹) of a rapid method for the estimation of foreign sugars in the blood in the presence of glucose throws new light on the chemical nature of the reducing substances circulating in the blood stream under normal and pathological conditions. Somogyi found that a simple substitution of a 10% (moist weight) yeast suspension for the distilled water used for laking and dilution in the Folin-Wu tungstic acid precipitation of the blood proteins results in the almost instantaneous total destruction of the glucose in the blood, leaving intact other sugars such as xylose, galactose and lactose and the various non-fermentable reducing substances in the blood.

The non-fermentable reducing substance of the blood was found to be remarkably constant in a series of patients not suffering from any metabolic disturbance and amounted to 28 ± 5 mg. per 100 cc. In another series of cases including uremia, diabetes, nephritis, this was found increased to as high as 90 mg. per 100 cc. Two patients in hypoglycemia from overdosage of insulin showed no reduction of

¹ Somogyi, M., *J. Biol. Chem.*, 1927, **lxxv**, 33.

the non-fermentable fraction. Pregnant women showed a high content of non-fermentable reducing substance.

Galactose and xylose introduced into the blood stream of rabbits disappeared at a rate proportional to the actual concentration of the sugar in the blood (Fishberg²). The mononuclear reaction formula $C = Ae^{-\alpha t}$ where C is the concentration of sugar in the blood, t is the time in minutes after injection, and α a constant gotten by elimination of A using any 2 separate experimental values of t , is found to apply to the rate of disappearance of foreign sugars injected into the blood stream.

If the kidney of the rabbit is damaged by the injection of uranium there is a distinct delay in the disappearance of the foreign sugar. On the other hand, if phloridzin is administered, the rate of disappearance of the sugar is much accelerated. If the rabbit is poisoned by phosphorus administered over a long period and shows definite fatty degeneration of the liver, there is a distinct retention of galactose in the blood stream.

In human beings galactose disappears more slowly from the blood of patients suffering from nephritis and diabetes. Especially xylose, which is excreted almost entirely through the kidney, shows a much slower rate of disappearance in nephritis, and the time of its disappearance from the blood stream is a good measure of the permeability of the kidney membrane.

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The Sedimentation Rate of the Erythrocytes in Chronic Arthritis.

M. H. DAWSON, RICHARD H. P. SIA,* AND R. H. BOOTS.

From the Arthritic Clinic† of the Presbyterian Hospital, New York.

Since the original observations of Fahraeus on the variation in the sedimentation rate of erythrocytes in health and disease the phenomenon has been studied in a wide variety of pathological conditions.

We have been interested in the reaction in only one class of cases—patients suffering from chronic multiple arthritis. Employing Westergren's¹ modification of Fahraeus' technique we have made

² Fishberg, E. H., *J. Biol. Chem.*, 1930, lxxvi.

* On leave of absence from the Peiping Union Medical College, Peiping, China.

† Supported by the Faulkner Memorial Fund.

¹ Westergren Alf, *Acta Medica Scandinavica*, 1920, liv, 247.