96 (1160)

Protein absorption by blood corpuscles.

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If 1 per cent. goat serum is added to freshly drawn defibrinated normal rabbit blood, the mixture incubated for one hour, and then separated by centrifugation into serum and corpuscle fractions, a titration of the serum fraction by specific precipitin methods will usually show but 25 per cent. of the goat protein originally added to the blood.

If the serum and corpuscle fractions so obtained are allowed to undergo independent autolysis (10 hrs., 37° C.), a distinct restoration of the goat protein is observed in each fraction. The restoration of the protein in the corpuscle fraction, however, is usually much more pronounced than that in the serum fraction, and may amount to as much as 50 per cent. of the total protein originally added to the blood.

If goat serum is slowly injected intravenously into normal rabbits in amounts not exceeding 1 per cent. of the total blood volume, and blood is withdrawn from 1 to 4 hours later, a distinct restoration of the goat protein can be brought about by allowing the centrifuged but unwashed corpuscles so obtained to undergo autolysis.

Parenterally introduced proteins, therefore, are apparently absorbed in large measure by the circulating blood corpuscles.

97 (1161)

Toxicity of foreign sera for the isolated mammalian heart.

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Seven per cent. to 10 per cent. goat serum in Locke's solution perfused under constant pressure and temperature through the

coronary arteries of an isolated normal rabbit heart, usually produces the following series of phenomena:

1. An initial tachycardia, lasting about three minutes, succeeded by

2. A period of apparently normal heart action, lasting about five minutes, succeeded by

3. A secondary tachycardia, lasting about two minutes, ushering in

4. A period of decreasing rate and strength of heart action, increasing irregularities, etc., usually ending in inactivation of the heart in about ten minutes.

If goat serum is separated into diffusible and non-diffusible fractions by dialysis through a celloidin membrane, and the two fractions are tested independently, the following results are usually obtained:

1. The diffusible substances tested in 7 per cent. to 10 per cent. dilution usually produce an initial tachycardia indistinguishable from the tachycardia from the whole serum. This is succeeded by a period of regular rate and rhythm usually lasting for over an hour.

2. The non-diffusible substances (serum colloids) similarly tested usually give no initial tachycardia, the rate and rhythm continuing unchanged for about ten minutes. There is then usually a slight secondary tachycardia, ushering in a period of decreasing heart action, usually ending in inactivation in about fifteen minutes.

The secondary tachycardia is always accompanied by a progressively decreasing rate of perfusion through the coronary arteries, and beginning myocardial edema. We are therefore inclined to attribute the secondary tachycardia and subsequent heart-death to a breaking down of the capillary defenses (increased capillary permeability), allowing the foreign colloids to pass out of the capillaries into the tissue spaces, thus coming into direct contact with the essential myocardial cells.