70 (213)

On the influence of CO_2 on the viscosity of the blood.

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It has been proved by the author[1] that the blood in the veins possesses a somewhat greater viscosity than the blood in the arteries. As this difference is caused no doubt by the greater amount of CO_2 present in the venous blood, it became of some consequence to determine whether the arterial blood could be made to assume a greater viscosity by increasing its CO_2 content.

The dogs used in these experiments received alternately a supply of normal air and air charged with CO_2. During the period of inhalation of the air plus CO_2 the arterial blood showed a somewhat greater viscosity than during the time when the animal breathed normal air. The changes appeared very promptly, but were never very conspicuous. The specific gravity of the blood pursued a course parallel to that of the viscosity.

71 (214)

Agglutinins and precipitins in anti-gonococcic serum.

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In December, 1906, I described the action and method of production of an anti-gonococcic serum which gave evidence of being of therapeutic value in the treatment of gonorrheal arthritis. At the time announcement was made of the fact that the serum contained specific agglutinins and precipitins for gonococcus. Since then a detailed investigation into the nature of these anti-bodies has been carried on. The results of this study may be summarized as follows:

1. Rabbits and other laboratory animals, when inoculated with cultures of gonococcus, raise specific agglutinins and precipitins.

[1] This journal: 1903, i, p. 23.

2. Normal rabbit sera contain a varying amount of agglutinin for gonococcus.

3. Strains of gonoccoci differ greatly in the titer of their agglutination with various gonococcic immune sera.

4. After one inoculation with a certain culture a large amount of agglutinin was produced for some strains, but none for others. Further inoculations caused an increase in the titer of the agglutination for certain strains but a drop in that of others.

5. Absorption experiments indicate that an anti-gonococcic serum may contain, in addition to the specific homologous agglutinins, several groups of agglutinins which act on the different cultures quite independently of one another. At least three groups were found, whose major or specific agglutinins are not removed by inter-absorptions. This indicates that as far as agglutination is concerned there are specific differences between these groups. The family gonococcus is, accordingly, heterogeneous rather than homogenous, and in that respect resembles the dysentery, colon and streptococcus families. In making a serum for therapeutic purposes, this fact should be borne in mind.

6. The passage of a culture of gonococcus through a guinea-pig caused a very marked decrease in its agglutinability.

7. With the exception of one serum, meningococcus agglutinated only in low dilutions of the anti-gonococcic sera.

8. Anti-gonococcic serum contains specific precipitins for gonococcus.

9. There appeared to be no relation between the precipitating and the agglutinating properties of an anti-gonococcic serum for a culture of gonococcus.

10. Anti-gonococcic sera contain as a rule some precipitins for meningococcus, but none for m. catarrhalis or staphylococcus.

11. There is evidence, according to my experiments, of a relationship between gonococcus and meningococcus, but not of as close a one as has been described by some investigators.