Table I shows the results obtained with two buffer solutions, having initial pH values of 7.68 and 8.80,

TABLE I

Glucose (g. per 20 ml.)	pH	Glucose (g. per 20 ml.)	pH
No glucose	7.68	No glucose	8.80
0.104	7.21		
0.282	6.78	0.363	7.79
0.736	6.26		
1.159	5.83	1.186	6.95
1.987	5.47	2.353	6.42
3.434	4.96		
4.242	4.79	4.900	5.76
5.553	4.56		
6.412	4.45	7.152	5.47
10.627	4.03	10.868	5.20
13.834	3.82	14.170	4.91
16.613	3.66		
19.101	3.54	19.884	4.60
19.833	3.52		
21.298	3.46	21.127	4.56

respectively. With increasing glucose concentration the glucose effect is seen to have been relatively less pronounced; the effect of adding about 2 g. of glucose produced about half as much depression of pH value as was produced by adding about 21 g., and the difference between the pH depression caused by addition of about 10 g. and that caused by addition of about 21 g. was only about 0.60. The maximal decrease in pH value was the same for both solutions, namely 4.22 and 4.24. The effect was shown to be reversible; after glucose had been added, pH was increased when boric acid or borax was added to the solution. A number of writers have given evidence that glucose may form a union or complex with such substances as boric acid, but the exact nature of the union is still uncertain.

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ISOLATION OF IMMUNOLOGICALLY PURE ANTIBODY

IT is now well known that the polysaccharide prepared from Type I pneumococcus precipitates specifically the antibody from Type I anti-pneumococcus serum. The precipitate so obtained can be washed free from inert proteins. If the washed precipitate is dissolved in dilute alkali, allowed to stand over night and then neutralized, about 50 per cent. of the protein in the precipitate is recovered in a soluble form. This soluble protein can be precipitated from the solution by dialysis (to remove the salts) and adjustment of the pH to 7.6 which may be regarded as its isoelectric point.

The protein so obtained agglutinates, and protects mice from an otherwise fatal dose of, Type I Pneumococci, as does the original serum, but the titer of these reactions is increased 15 to 20 fold. From a 0.2 per cent. solution the protein is 90 per cent. precipitable by the homologous polysaccharide, the remaining 10 per cent. can be accounted for by the solubility of the immune precipitate. If the immune precipitate obtained with the recovered protein is again dissolved in alkali, allowed to stand and neutralized, the protein recovered for the second time has quantitatively the same activity as before. The protein may therefore be regarded as a pure antibody, at least immunologically.

We have made essentially the same observations with the precipitate obtained from Type I Pneumococcus antisera of horse and rabbit and with Type III Pneumococcus antiserum of rabbit. We have found it also possible to recover the antibodies from the Type I Pneumococcus agglutinate by essentially the same method used for the precipitate. The method described above for the isolation of antibody thus appears to have a general application.

The isolation of immunologically pure antibody is theoretically and practically significant. It has been a debatable question whether antibody is itself a protein or something else carried by the protein. Our present findings leave little doubt that the antibody itself is a protein. The mechanism of immunological reactions is not yet clear. Now that pure antibody is available, we can advantageously restudy the mechanism of immune reactions, especially the precipitin reaction. On the practical side, the preparation of pure antibody places in the hands of the clinicians therapeutic agents where serum therapy was not practical before, *e.g.*, in Type III pneumonia the antiserum for which has a very low antibody content.

The details of our observations will be reported in the *Chinese Journal of Physiology.*

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