MEDICINE-IMMUNOLOGY

Better Pneumonia Treatment Made Possible by Research

Antibody Is a Protein, Experiments In China and at Rockefeller Institute Indicate; Action Not Specific

IMPROVED treatment of Type III pneumonia is now possible as a result of experiments made in China and reported in the current issue of the journal *Science* (Oct. 2).

The antibody which helps fight pneumonia germs has been isolated in immunologically pure form, Drs. Bacon F. Chow and Hsien Wu of Peiping Union Medical College report. The precipitate of antibody which they obtained is much more effective in fighting pneumonia germs than the anti-pneumonia serums now in use, it appears from their report. This is of particular importance in connection with Type III pneumonia, the serum for which has a very low antibody content.

While this is the practical significance of the isolation of this antibody, the work is also significant because it gives scientists a much better means of studying the mechanism of antibody action.

The much mooted question of the nature of antibodies is also settled by this research, in the opinion of Drs. Chow and Wu. They report that their findings "leave little doubt that the antibody itself is a protein." This means it belongs chemically in a class with meat and eggs, rather than with the fats or the sugar and starch group. Scientists have not been sure whether disease-fighting antibodies were themselves protein in nature or whether they were something carried by protein.

"On the practical side, the preparation of pure antibody places in the hands of clinicians therapeutic agents where serum therapy was not practical before, e.g., in Type III pneumonia, the antiserum for which has a low antibody content," the scientists state.

Type III is one of the 32 or more types of pneumonia which are classified according to the particular pneumonia germ causing the disease. Success in treating the disease depends on determining early in the illness the type of germ responsible and giving the corresponding serum. Types I and II pneumonia germs cause over half of all the cases of the illness. Type III causes less than one-tenth. The serums for Types I and II have been more effective than those for the other types. Improvement in the serums for these types is also indicated by Drs. Chow and Wu.

The true nature of antibodies had already been brought several steps nearer definition by studies just reported by Dr. Ralph W. G. Wyckoff of the Rockefeller Institute for Medical Research (*Science*, Sept. 25).

Like Drs. Chow and Wu, Dr. Wyckoff worked with antibodies from Type I pneumonia serum which saves lives of pneumonia patients by augmenting their own dwindling supply of disease-fighting antibodies. A concentrate of material containing the antibodies was obtained by whirling the serum in an ultracentrifuge, which separated the heavier from the lighter parts of the serum. The heavier layer at the bottom contained the antibodies and proved to be a mass of protein molecules of a definite nature.

Two possibilities concerning the nature of this substance have still to be investigated. The protein molecules associated with the antibodies may be made or freed in excess during immunization or vaccination, in order that there may be plenty of it present to fix all the antibody activity that may develop. Or the protein molecules may be the antibodies themselves.

If this is the case, as the studies of Drs. Chow and Wu now seem to prove, current theories about the specificity of antibodies are upset. According to theory, each antibody is specific for the antigen produced by a certain disease germ and fights or protects effectively only against that germ. But Dr. Wyckoff's studies show, in his opinion, that a single protein molecule can act like more than one antibody. If these protein molecules are the antibodies themselves, a single antibody concentrate, such as many protective serums and vaccines now used are, might give protection against more than one disease.

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PLENTY OF ULTRAVIOLET

New light on the puzzling problem of why green vegetables are notoriously lacking in vitamin D is coming from experiments at the Albany Medical College by Prof. Arthur Knudson (left) and Frank Benford of the General Electric Co. Using this device, which splits up ultraviolet radiation into any wavelengths wanted for study, the scientists have found that intermittent or moderate doses of ultraviolet rays will aid the formation of vitamin D but that intense and prolonged exposure such as plants receive will destroy the vitamin.