

Antitoxin, as is evident from this description, acts only against the toxin and practically is only of marked value where the toxin is a soluble and diffusible one, as in diphtheria and tetanus. It does not act against the bacteria themselves, and its production and value in those diseases due to bacteria whose toxins are mainly cellular, is usually low. After infections of this latter class there are found in the blood certain bodies which possess a peculiar disintegrating power (anti-microbic or bacteriolytic) on the bacteria causing the disease. At times, in such infections, bodies are found which have an agglutinating and precipitating effect when added to cultures of the bacterium. Frequently these two kinds of bodies (bacteriolytic and agglutinating) are found together in the blood, but either one may be present without the other, so that while the two processes are to a certain extent related, it is likely that they are essentially independent. Like antitoxin these bodies are specific and will need to be studied more in detail.

If a rabbit is immunized against injections of the cholera spirillum it is found that its serum when fresh drawn has the property of first agglutinating and then disintegrating the cholera spirillum when added in fresh culture. If this serum is allowed to stand some days or is heated to a temperature of 130°F . for twenty minutes it loses its bacteriolytic power while still retaining its agglutinating action. If to such serum, some serum from a non-immune rabbit is added its bacteriolytic properties are restored. From these facts one learns: 1st, that the agglutinating and bacteriolytic bodies are different substances. 2nd, that bacteriolysis depends on two substances, first, some specific body developed in the immunizing process, and second, a substance which is normally present in the serum and which is destroyed by heat or on long standing. Without this substance which Ehrlich terms the 'complement' (or addiment) bacteriolysis cannot occur. Again one must bring to his aid Ehrlich's conception of the rationale of this process to explain satisfactorily these facts. Ehrlich looks upon the specific body or 'bacteriolysin' as having a double set of 'receptors' (ambo-receptor.) Through one set it is bound to the bacterial cell,