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## Immunological studies on certain albuminoids.

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Under the term "albuminoids" a group of substances are classified whose chief properties appear to consist in insolubility in all neutral solvents and resistance to enzymatic digestion. Solubility can be effected only through the agency of strong acids and alkalis. No work on the ability of these substances to act as antigens appears to have been carried out. Since solubility is an essential factor in the production of immune bodies as well as in the demonstration of their presence it might, *a priori*, be assumed that the members of this group are non-antigenic. The experiments herein described were carried out for the purpose of obtaining experimental data relative to the ability of several members of this group to act as antigens.

The fibroin was obtained from silk cocoons. The water-soluble proteins were extracted by repeatedly washing the silk in cold water, then autoclaving, and repeatedly washing with fresh portions of boiling water. The spongin was similarly treated. In order to induce production of immune bodies, 50 to 100 mgs. of fibroin were placed in the peritoneal cavity of each of three rabbits, and four rabbits were similarly treated with spongin. Attempts to demonstrate the presence of fixation antibodies at the end of a month were wholly negative. In carrying out the test a small arbitrary amount of "antigen" was employed. After addition of serum and alexin the mixture was incubated for several hours to give the maximum opportunity for the fixation of alexin, and allowances for the mechanical absorption of the added constituents by the spongin were made by the aid of a large number of control determinations with normal sera. Attempts to demonstrate immune bodies by skin tests were likewise negative. The autopsy findings showed masses of unaltered fibroin or spongin encapsulated by vascular connective tissue.

Another series of experiments was carried out with friable fibroin which was prepared in accordance with the suggestions of

Städeler<sup>1</sup> by treating fibroin with 5 per cent NaOH and subsequently neutralizing with HCl. The material so obtained can be finely ground, and by using a large needle a suspension of this substance can readily be injected intraperitoneally. Two rabbits received 7 doses of 100 mg. each over a period of two weeks, and two others were given 8 injections of 25 mg. each over a period of two months. Attempts to demonstrate the presence in the blood stream of fixation antibodies were entirely negative.

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#### Studies in tuberculosis. V. Phosphatids of tuberculin with diagnostic and sensitizing properties.

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In a series of earlier publications<sup>1</sup> an alcohol-soluble and ether-precipitable substance, "Ether-insoluble X," was described in connection with experiments on sensitization and diagnosis in animals and in tuberculous patients. Preliminary qualitative procedures pointed toward identifying this derivative with a phosphatid, probably lecithin, which represented a small fraction of the original old tuberculin. Typical tuberculin reactions were elicited, notwithstanding the exceedingly high dilutions that were used in the tests. It was suggested that the antigenic radical of *B. tuberculosis* might reside in such a fraction, and that the isolation of this derivative from tuberculin might offer a lead in the direction of explaining the mechanism of tuberculin reactions and the phenomena of sensitization which I have reported previously.

The present report is a chemical study of some lecithin-like fractions which have been obtained from old tuberculin (human)

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<sup>1</sup> Städeler, G., *Ann. d. Chem. and Pharm.*, 1859, iii, 12.

<sup>1</sup> Ebersson, F., *PROC. SOC. EXP. BIOL. AND MED.*, 1924, xxi, 539; *Am. J. Dis. Child.*, 1925, xxix, 29; *Am. Rev. Tuberc.*, 1925, March (in press).