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Preparation and Immunological Properties of Acid-Denatured Egg Albumin.*

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Aqueous solutions of 3 times recrystallized Ea were allowed to stand at room temperature for 1 to 2 days with HCl between pH 1.5 and 2.3. Depending upon the acidity, from 25 to 75% of the Ea was denatured. The DnEa was precipitated by adding NaOH until the isoelectric range, pH 5.2 to 5.4, was reached. Three additional reprecipitations usually sufficed to remove unchanged Ea. The pre-

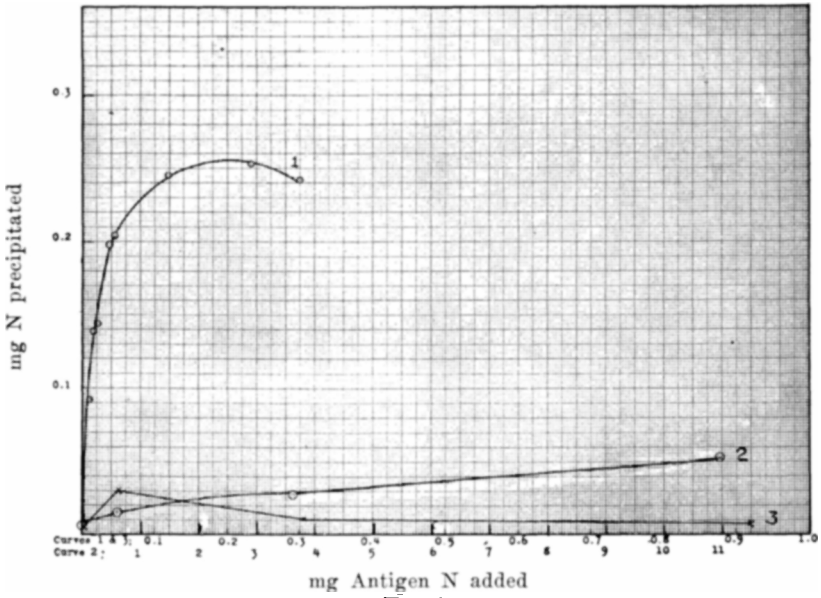

FIG. 1.

Precipitation of Anti-DnEa and Anti-Ea Sera by DnEa and Ea.

Curve 1—N precipitated from anti-DnEa by DnEa. The Ea-anti-Ea curve is similar.[1]

Curve 2—N precipitated from anti-DnEa by Ea.

Curve 3—N precipitated from anti-Ea by DnEa. Supernatants in this series remained opalescent.

Sera compared at approximately equal antibody-content.

*** Egg albumin and acid-denatured egg albumin are subsequently referred to as Ea and DnEa respectively. This note is from a dissertation to be submitted by Catherine MacPherson in partial fulfillment of the requirements for the degree of Doctor of Philosophy in the Faculty of Pure Science, Columbia University.**

cipitate was dispersed in water, dissolved at pH 7, and allowed to stand in the cold for 4 to 5 days after which it was more stable to physiological concentrations of NaCl. Reversion to Ea did not take place.

Three preparations which differed in appearance and solubility in water at pH 7 were found to remove, per mg of DnEa N, the same amount of N from a calibrated anti-DnEa serum.

The reaction between DnEa and its homologous antibody is similar to that between Ea and anti-Ea.[1] The cross-reactions between anti-Ea and DnEa and between anti-DnEa and Ea differ greatly from both homologous reactions and from each other, as shown in Fig. 1.

A study of the chemical and physical properties of Ea denatured in various ways and a correlation of these properties with the immunological findings is now in progress. Previous work in this field appears to have been confined to a preliminary note by Wu, TenBroeck, and Li,[2] the studies of Flosdorff and Chambers[3] and Blumenthal,[4] and the work of Porter and Pappenheimer,[5] and Landsteiner and Rothen[6] on surface-films.

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