

## 7216 P

**Anaphylactogenic Properties of Purified Milk Proteins, Raw, Evaporated, Superheated, Dried and Acidified Milk.\***

BRET RATNER AND H. L. GRUEHL.

*From the Departments of Pediatrics and Immunology, University and Bellevue Hospital Medical College, New York University, and the Children's Medical Division, Bellevue Hospital, New York.*

A study was made of the antigenic changes that result when milks are boiled, evaporated, superheated, dried or acidified. This was done to determine why individuals sensitive to raw or pasteurized milk can generally tolerate milks modified by heat.

The milk proteins were purified and their immunochemical reactions studied by the anaphylaxis method in the guinea pig. It was found that the proteins isolated from raw milk are chemically and biologically distinct.

The immunochemistry of evaporated, superheated, freshly boiled, acidified and dried milks and their immunological relation to the purified proteins from raw milk were studied. It was found that there were no antigenic changes as a result of drying, acidification or pasteurization. Milks that were dried, acidified, superheated or evaporated showed no loss in the antigenic properties of the casein fraction. As a sensitizing agent, given by injection, evaporated, freshly boiled and superheated milks showed practically no loss in the antigenic character of the lactalbumin fraction but as a shock agent these milks showed an unmistakable loss in the antigenic properties of the whey proteins.

Raw and the various modifications of milk described above were fed to a large number of guinea pigs. Evaporated, freshly boiled and acidified evaporated milk, when fed, showed a marked reduction in sensitizing ability. The acidified raw, dried and superheated milks did not differ from the raw milk.

A human case markedly sensitive to lactalbumin was studied immunologically. This patient developed anaphylactic shock with recovery when given 0.02 cc. of a 1% solution of pure lactalbumin intracutaneously. The blood serum containing lactalbumin antibodies passively sensitized normal guinea pigs and the skin of normal human recipients. The child was shown to tolerate evaporated milk in large amounts although raw milk, taken by mouth, in very small amounts produced anaphylactic reactions.

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The loss in antigenic properties in heated milks is presumably due to the coagulation of the whey proteins, for which there is some evidence of reversibility. A further reduction in antigenic properties of heated milks when fed is due to the fact that heating makes for more complete digestion, and thus diminishes the probability of the absorption of native proteins through the intestinal wall.

## 7217 C

## The Normal Polynuclear Count in Man.

JULIUS C. ABELS. (Introduced by Eric Ponder.)

*From Washington Square College, New York University.*

Ever since Cooke's polynuclear count became generally used in physiology and clinical medicine, the figures for the normal count in man, as given originally by Cooke and as republished by Cooke and Ponder<sup>1</sup> have been accepted as correct. These figures are as follows:

	I	II	III	IV	V	Mean
Lowest normal count	15	34	40	11	0	2.47
Average normal count	12	25	44	15	4	2.74
Highest normal count	9	24	47	17	3	3.11

Cooke and Ponder's normal count is based on the average of the counts for 90 people of both sexes between the ages of 12 and 55, the greatest possible care being taken to exclude foci of infection. That their standard was exceedingly rigorous is indicated by the fact that these 90 "normals" took many years to collect.

But it has been suspected that the criterion of normality used by Cooke and Ponder was too rigorous, and that the counts of "normal" people, in the sense in which the term is generally used by physiologists and clinicians, are more left-handed than the above figures indicate. Kennedy<sup>2</sup> has reinvestigated the matter, using a less rigorous "health standard" more likely to be met by people "normal" in the ordinary sense. His conclusion, however, is that the figures given by Cooke and Ponder are substantially correct, and that an average polynuclear count with a mean of from 2.62 to 2.72 is met in a population of normal persons, whether normality is

<sup>1</sup> Cooke and Ponder, "The Polynuclear Count." London, 1927.

<sup>2</sup> Kennedy, *Quar. J. Exp. Physiol.*, 1933, **22**, 377.