may appear in the absence of the labyrinth and are thus not necessarily dependent upon labyrinthine stimulation.

It is concluded (1) that, following removal of the heads of both caudate nuclei, labyrinthine stimulation exercises a reduced influence of a normal type upon the behavior of the animal and that (2) such removal abolishes the dyskinesia and hypokinesia, which follow destruction of both labyrinths, substituting in their place the typical effects which follow the former operation (namely "leaping," hyperkinesia, resistance to impressed movements and a certain degree of fatuity).

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## Rate of Absorption of Amino Acids from the Small Intestine in Man.

LEMUEL C. MCGEE AND EDWARD S. EMERY, JR. (Introduced by A. Baird Hastings.)

*From the Medical Clinic, Peter Bent Brigham Hospital, and the Departments of Medicine and Biological Chemistry, Harvard Medical School.*

Using the Miller-Abbott[1] tube for intestinal intubation, observations were made on the disappearance rate of nitrogen from an amino acid mixture placed directly into the jejunum. Solutions of known concentration were introduced immediately above a single inflated bag at a point 50 to 80 cm below the pylorus, a method used by Groen[2] in studies on glucose absorption. Fasting jejunal juice was obtained before each series of observations and the figure found for nitrogen in each instance (0.6-1.2 mg cc) was subtracted from the results of analyses made on specimens withdrawn at intervals subsequent to the introduction of the solutions.

The subjects included 2 normal individuals, 2 with duodenal ulcer responding well to medical management, 3 with achlorhydria (well-controlled pernicious anemia patients), and one patient with a subtotal gastric resection. Repeated observations were possible with several subjects. As a control, the rate of absorption of unhydrolyzed protein was determined at least once for each of the 4 classifications mentioned above.

The amino acid mixture* used was "a purified casein digest pre-

[1] Miller, T. G., and Abbott, W. O., *Am. J. M. Sci.*, 1934, **187**, 595.

[2] Groen, J., *New England J. M.*, 1938, **218**, 247.

* Product 92Z, Mead Johnson & Co.

pared with pancreatic enzymes".[3] The amino acid powder dissolves readily in water warmed to 70° C. Solutions of from 2.5 to 5% were used. The disappearance rate of the nitrogen in such solutions was determined in 11 instances. (Chart 1.) Control observations were

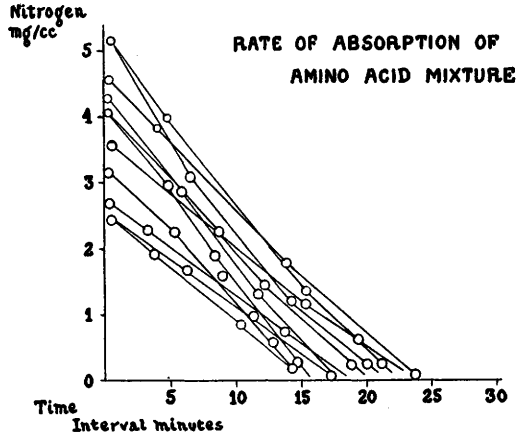


CHART 1.

obtained by instilling unhydrolyzed casein dissolved in a solution of sodium carbonate and neutralized to a pH of 7.0 with hydrochloric acid (2 instances), a solution of gelatin in water (2 instances), and casein of milk (4 instances). (Chart 2.)

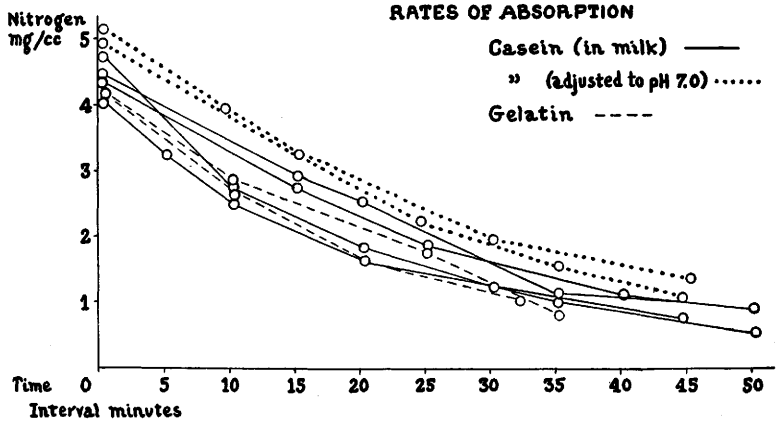


CHART 2.

Nitrogen determinations were made by the Kjeldahl method in the control group (using unhydrolyzed protein) and by both the Kjeldahl method and Sorensen (formol) titration when using solutions of amino acids.

[3] Cox, W. M., and Mueller, A. J., PROC. SOC. EXP. BIOL. AND MED., 1939, **42**, 658.

No essential differences in absorption of amino nitrogen from the jejunum were noted between the normal, the ulcer bearing, the pernicious anemia and the resection subjects. The results are summarized by plotting the milligrams of nitrogen per cubic centimeter in samples withdrawn through the tube against the time of withdrawal of the respective specimens.

*Summary.* (1) By means of intestinal intubation in man the absorption rate of hydrolyzed and unhydrolyzed protein from the jejunum has been estimated. (2) Most of the nitrogen of a 4 to 5% solution of casein and gelatin is absorbed 40 to 50 minutes after its introduction directly into the small intestine. (3) The nitrogen of an amino acid mixture (hydrolyzed casein) of similar concentration is fairly completely absorbed 15 to 25 minutes after its administration in the same manner.

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## Failure to Infect the Great Horned Owl with the Sporozoites of *Plasmodium cathemerium.*

HARRY BECKMAN AND ROBERT K. OTA.

*From the Department of Pharmacology, Marquette University School of Medicine, Milwaukee, Wisconsin.*

Several years ago Wolfson[1] reported the intramuscular injection of a great horned owl with about 200 mg of blood from a canary which had a heavy mixed infection of *P. praecox* and *P. cathemerium.* Eight weeks after the injection of the owl a canary was injected intramuscularly with some of its blood and showed parasites in the peripheral blood after a prepatent period of about a week. Ten weeks after the injection of the owl a second canary was injected with some of its blood and showed parasites in the peripheral blood after a prepatent period of about 9 days. The first canary infection was predominantly *P. praecox* and the second predominantly *P. cathemerium.* The owl died at the tenth week and had never shown any organisms in the peripheral blood at any time. We have had the following experience in attempting a similar infection with sporozoites.

On January 30, 1940, two great horned owls (*Bubo virginianus virginianus*) were brought to our laboratory through the kindness

[1] Wolfson, F., *Am. J. Hygiene,* 1937, **26**, 53.