

Abstracts of Current Literature



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NIACIN REQUIREMENTS AND METABOLISM

A precise value for niacin requirement is difficult to define because of the formation of the vitamin by dietary tryptophan, a conversion requiring pyridoxine. Using pellagragenic diets, low in tryptophan, consisting of cereal products, a level of niacin intake of approximately 8 g has been proposed as adequate in two independent studies.

Studies of Niacin Requirements in Man. II. Requirement on Wheat and Corn Diets Low in Tryptophan. G. A. Goldsmith, H. L. Rosenthal, J. Gibbens, and W. G. Unglaub. *J. Nutrition* 56: 371, 1955.

The niacin requirement of humans can be determined only in relation to the tryptophan content of the diet, since it has been shown that the amino acid tryptophan is converted to niacin compounds in man as well as in many other species.

Three subjects were maintained for 90 to 105 days on a "wheat" diet which furnished approximately 5 mg of niacin and 200 mg of tryptophan daily. One subject developed typical niacin deficiency beginning 80 days after the diet was instituted, a second developed amenorrhea, herpes of the lip and slight redness of the tongue papillae, and a third showed lassitude and depression as the only clinical findings. In contrast to this, each of three subjects previously maintained on a "corn" diet of comparable niacin and tryptophan content showed the characteristic clinical picture of niacin deficiency after about 50 days of the experimental period. Excretion of N¹-methylnicotinamide decreased to lower levels within a shorter period of time, and tryptophan excretion was slightly lower during the corn than during the wheat regimen.

The time at which pellagra developed, and the sever-

ity of the deficiency, seemed to be related to the intake of niacin and tryptophan per unit of body size with both the "wheat" and "corn" diets. However, this relationship may not completely explain differences in clinical and laboratory findings between the two regimens. The low tryptophan content of corn may not be the sole explanation of the pellagragenic effect of this cereal. When the "corn" diet was supplemented with varying amounts of niacinamide, a significant increase in excretion of niacin metabolites occurred when the intake approximated 8 to 10 mg daily. These data suggest that with the "corn" diet, which furnishes 200 mg of tryptophan daily, body niacin stores approach adequacy when the diet supplies 8 to 10 mg of niacin.—
B. SURE

Maize and Pellagra. R. Braude, S. K. Kon, K. G. Mitchell, and E. Kodicek. *Lancet* 1: 898, 1955.

Nicotinic acid in cereals such as maize, wheat, barley, rye, and rice is present in a bound form and does not appear to serve as a source of the vitamin for the nicotinic acid-deficient rat, chick, or pig. The nicotinic acid can be released by hydrolysis with 0.5 N NaOH, and the experiment described was designed to test the availability of the vitamin to pigs after treatment of maize with alkali. The nicotinic acid metabolism of the pig is similar to that of man.

Three groups of pigs had a nicotinic acid deficiency induced and were then allotted three different diets. Group 1 was kept on the deficient diet, Group 2 was given 6 mg of nicotinic acid daily in addition, and Group 3 was given a diet in which the milling fractions of maize had been hydrolyzed for 30 minutes with 0.5 N NaOH.

Group 1 pigs gained almost no weight during the experiment. The Group 2 pigs recovered from their induced deficiency and gained weight well, and Group 3

pigs also recovered, although they gained weight at a somewhat slower rate than those of Group 2.

It is concluded that the difference between the Group 3 and Group 1 pigs is determined by the hydrolysis of the maize making nicotinic acid available to the Group 3 pigs, although the possibility of another chemical change has not been excluded.

It is thought that since the daily requirements of nicotinic acid for man have been estimated on the basis of dietary intake, as much as half of it may be unavailable and the true requirements are probably 6-8 mg rather than 12 mg. Alkaline treatment of cereal is a possible method of "enrichment" of the food-stuff.—F. E. HYTTEN

Information concerning the adequacy of the diet in niacin or tryptophan-containing protein can be obtained from analyses of the urine for the metabolites of niacinamide. Further observations on the effects of disease, exercise, and nutritional factors upon niacin metabolism are accumulating by use of these methods.

Nicotinic Acid Metabolism in Humans. I. The Urinary Excretion of Nicotinic Acid and its Metabolic Derivatives on Four Levels of Dietary Intake. E. I. Frazier, M. E. Prather, and E. Hoene. *J. Nutrition* 56: 501, 1955.

The nicotinic acid metabolism of six freshman and sophomore college women on four levels of dietary intake of nicotinic acid and tryptophan was studied. On a control diet providing 11.3 mg of the vitamin and 885 mg of tryptophan, the average amount excreted by the six subjects as the vitamin and its two major metabolites, N¹-methylnicotinamide and pyridone, balanced the intake. When the dietary nicotinic acid of the control diet was increased to 14.3 mg with a concomitant increase in tryptophan, there was a slight increase (1.0 mg) in the total amount of the vitamin and its metabolic derivatives found in the urine. Following the 28-day control periods of study, a basal diet containing 7.2 mg of nicotinic acid and 600 mg of tryptophan was fed for 11 days. The average decrease in total excretion during this regime as compared with the immediately preceding control level of excretion was 3.04 mg. On the basal diet the total average excretion (expressed as nicotinic acid) was 128 per cent of the amount ingested. During the post-basal period with an increase to 16.3 mg intake, the excretion of nicotinic acid and N¹-methylnicotinamide returned to control levels, while the amount of pyridone exceeded the prebasal level.

With each increment in dietary nicotinic acid, approximately one-third of the increase was excreted as pyridone; on the other hand, a comparable decrease in the intake of the vitamin was reflected in decreased amounts of the vitamin and N¹-methylnicotinamide excreted as well as the pyridone. There was considerable variation in the metabolic performance among the 6 experimental subjects.

The significance of the findings in this study has been discussed in relation to "normal" nutrition with respect to the nutrients studied.—B. SURE

Excretion of N¹-Methylnicotinamide and the 6-Pyridone of N¹-Methylnicotinamide in Urine of Human Subjects. H. L. Rosenthal, G. A. Goldsmith, and H. P. Sarett. *Proc. Soc. Exper. Biol. & Med.* 84: 208 1953.

The major excretory metabolites of nicotinamide in human subjects are N¹-methylnicotinamide and the 6-pyridone of N¹-methylnicotinamide.

In the present study, adult human subjects were maintained on constant diets low in nicotinamide and tryptophan. On such diets, they excrete approximately 3 mg of N¹-methylnicotinamide and 5 mg of pyridone N¹-methylnicotinamide. In some of the patients, the excretion of N¹-methylnicotinamide and of pyridone N¹-methylnicotinamide, following graded doses of 10, 25, and 50 mg of nicotinamide, respectively, was studied in three control female subjects. This was also studied in two female subjects with pellagra. From the data obtained, it appeared that significant differences in excretion of the metabolites occurred in the pellagra patients as compared to the normals when 10 or 25 mg of nicotinamide were given. The differences were much less marked when 50 mg were administered.—L. W. KINSELL

The Urinary Excretion of Tryptophan by Human Subjects on Controlled Diets Varying in Levels and Sources of Protein. E. I. Frazier. *J. Nutrition* 53: 115, 1954.

The amounts of "free" and total tryptophan excreted per 24 hours by 12 young adult women maintained on diets varying in levels and sources of protein have been studied. The amounts of the conjugated forms in the urine were derived by difference.

On constant intakes of a control diet providing 9.8 g of protein and 885 mg of tryptophan over periods of from 14 to 21 days, the mean levels of excretion were 30.6, 10.8, and 19.8 mg per day for total, "free," and "bound" tryptophan, respectively.

The same subjects were fed a basal diet with total nitrogen intakes of from 7.10 to 8.42 g and tryptophan intakes of from 521 to 616 mg per day for 14 to 35 days. On this regimen there was a slight decrease in the average amount of the "bound" form excreted (from 19.8 to 15.5 mg per day), while the average amount of "free" tryptophan excreted was the same: namely, 10.8 mg per day on both control and basal dietary regimens.

There was no apparent relation between the amounts of total, "free," and "bound" tryptophan excreted and the source or amount of dietary nitrogen. Further, the amount of tryptophan excreted was not related to body weight, surface area, basal calories, or urine volume. The data presented indicate a selective reabsorption of this amino acid by the tubules from the glomerular filtrate.—B. SURE

In the study of niacin metabolism, the dog has provided a fairly satisfactory experimental subject. Other animals, such as the rat, have manifested wide fluctuations in tryptophan requirements. Some of the problems involved are discussed in the following report.

The Tryptophan Requirement of the Rat as Affected by Niacin and Level of Dietary Nitrogen. W. D. Salmon. *Arch. Biochem. & Biophys.* 51: 30, 1954.

Previous demonstrations of interrelationships between tryptophan and niacin have indicated the need for a restudy of the quantitative requirements of the rat for tryptophan. Three basic diets which contained 7 per cent casein and 40 per cent degerminated corn grits, 7 per cent casein and 7 per cent corn gluten meal, and 9 per cent casein, respectively, were used. The level of amino acids was controlled by altering the level of casein or by the addition of gelatin, casein hydrolyzate, tryptophan, or glycine. Data were obtained which showed that: (a) niacin has a marked effect upon the tryptophan requirement and efficiency of food utilization; (b) the growth-depressing effects of tryptophan-deficient proteins or hydrolysates are due to increased requirement for tryptophan in the presence of adequate niacin; and (c) the tryptophan requirement fluctuates with the level of dietary nitrogen.

Since the conversion of tryptophan to niacin is considered to be inefficient and uneconomic, the tryptophan-sparing effect of niacin is of great significance in practical nutrition. On the other hand, niacin did not correct the growth depression when the addition of tryptophan-deficient material was of sufficient magnitude. Under the latter condition, the growth depression could be corrected only by tryptophan. Niacin corrected the growth depression only when the additions were made to diets that contained a limited surplus of tryptophan above that needed for use as the amino acid *per se*. The primary effect of tryptophan-deficient materials was to decrease the efficiency of utilization of tryptophan and hence to increase the requirement of this amino acid.

The requirement of the rat for tryptophan does not seem to be a constant value. It increases as the level of dietary nitrogen increases. With adequate niacin in the diet, the tryptophan required for normal growth at a dietary protein level of 10.8 per cent was 0.13 per cent of the diet. When niacin was omitted from the diet, the tryptophan required for normal growth at a 10.8 per cent level of dietary protein increased to 0.19 per cent of the diet. Without supplementary niacin and with casein used as a source of tryptophan, the tryptophan requirement for normal growth was 0.30 per cent of the diet.

In also considering previous work which showed that gelatin decreases the availability of methionine and hence increases the requirement for this amino acid, it is suggested that the imbalance effect is a general phenomenon that will alter the requirement of any essential amino acid.—M. K. HORWITT

The drop in eosinophils and rise in blood sugar reported in the following abstracts suggest that epinephrine release may occur as a result of administration of large doses of niacin. Activation of adrenal steroid release may follow hyperepinephrinemia to sustain the effects observed.

Effect of Niacin and Nicotinamide on Leukocytes and Some Urinary Constituents. A. Hoffer. *Canad. M. A. J.* 74: 448, 1956.

The author has used nicotinic acid or its amide in large oral doses (3-10 g/day) for the treatment of acute schizophrenia. This vitamin has also been reported to counteract many psychologic and physiologic reactions of LSD (lysergic acid), to have anticonvulsant properties, etc. As a further study of its action, a group of healthy volunteers, ages 18 to 41 years, took large doses by mouth.

Nicotinic acid produced a fall in eosinophils within two hours: the neutrophils increased, the lymphocytes decreased slightly. The ratio of urinary uric acid to creatinine was decreased. The urine became more acid; potassium was retained, while sodium excretion was increased.

Nicotinamide produced an early lymphocytosis (at 2 hours) and a later (4 hours) eosinopenia and neutrophilia. In contrast to the acid, the ratio of uric acid to creatinine was increased, while urine acidity was decreased. Both potassium and sodium excretion were increased.

This paper also briefly discusses the similarities and differences between nicotinic acid (and amide) and cortisone, epinephrine, and norepinephrine. The author makes the interesting suggestion that large quantities of nicotinamide compete with norepinephrine for methyl groups, and that large quantities of the vitamin might be of value in conditions characterized by epinephrine overproduction.—S. O. WAIFE

Effects of Niacin and Nicotinamide on Blood Sugar. G. N. Bera. *Am. J. Physiol.* 175: 296, 1953.

Hyperglycemia resulted when niacin and nicotinamide were injected into fasted rabbits. The maximum blood sugar and niacin blood levels were reached at one hour after injection. The epinephrine content of the blood was also high at this same time. The authors conclude that niacin or its amide stimulates the secretion of epinephrine. This, in turn, causes hyperglycemia. The epinephrine content in the blood after niacin may explain the cardiac stimulation, vasoconstriction, and rise in blood pressure found in these animals.—M. J. OPPENHEIMER

Influence of Nicotinic Acid on Serum Cholesterol in Man. R. Altschul, A. Hoffer, and J. D. Stephen. *Arch. Biochem. & Biophys.* 54: 558, 1955.

Serum cholesterol was determined before and after oral doses of 1 g of nicotinic acid were administered to healthy young medical students and to patients with various diseases. The authors found that nicotinic



acid ingestion decreases serum cholesterol. All of the subjects who received the nicotinic acid showed the "flushing" reaction with "burning" sensations of the skin. Hypercholesterolemic levels are affected more than normal levels. Nicotinic acid amide had no definite influence on serum cholesterol levels of 20 healthy young medical students.—M. K. HORWITT

NUTRITIONAL PROBLEMS INVOLVING THE GASTROINTESTINAL TRACT

The unfavorable sequelae of gastric surgery are principally (a) nutritional failure and (b) the postgastrectomy "dumping" syndrome. The latter condition occurs infrequently and is characterized by weakness, tremulousness, sweating, palpitation, and distension. It may occur directly after meals or within one to two hours after eating. Diet therapy involves the use of foods which will delay gastric emptying, prevent rapid fluctuations in blood sugar, and avoid influx of water into the small intestine through osmotic attraction. The problem of nutritional failure is probably a combination of diminished appetite, reduced caloric intake, and decreased fat absorption.

Nutritional Problems following Gastric Resection: Fat and Protein Absorption. E. H. Ellison. *Surg. Clin. N. Am.* 35: 1683, 1955.

Impairment of digestion and absorption is an important late postoperative complication in patients undergoing gastric resection for peptic ulcer or carcinoma. Certain of these patients are incapacitated by the nutritional disturbances to the point where they have been described as "gastric cripples." To gain further information as to the incidence, etiology, management, and prevention of the nutritional problems following gastric resection, a continuing study has been in progress at the Ohio State University College of Medicine during the past four years.

Nitrogen and fat absorption were assessed in 16 patients with subtotal gastric resections performed one to 31 months previously for gastric or duodenal ulcer. The patients were given fixed diets which approximated what they were eating at home. Fat absorption was apparently impaired in the entire group of patients—the apparent average fat absorption was about 70 per cent, as contrasted with the usual normal of 90–95 per cent. It is Ellison's belief that this disturbance in fat absorption, continued for long periods of time, accounts for the observed weight loss of many of these patients. The quantitative aspects of these observations are limited by the shortness of the periods of balance study—3 days. While an overall approximation of the situation may be possible by the method employed, in any single instance the data so obtained may be misleading.

Ellison mentions that the data suggest an inverse relationship between the efficiency of fat absorption and the amount of stomach removed—but it should be pointed out that the postoperative weight patterns are at variance with the fat absorption figures. There

were less nutritional disturbances when the stomach remnant was anastomosed to the duodenum rather than to the jejunum. This is in keeping with observations from several other clinics and is leading to a revival of the gastro-duodenal anastomosis technique.

Ten patients with total or near total gastric resection for malignant tumors were also studied in the period one to 31 months postoperatively. The average weight loss of this group of patients was 19.6 pounds; none had regained his preoperative weight. The apparent fat absorption average was about 67 per cent in the seven patients with total gastrectomy and about 80 per cent in the three patients with near total gastrectomy. Fecal nitrogen was about normal in the latter group, somewhat high in the former. Esophago-duodenostomy appeared to be the method of choice for re-establishment of intestinal tract continuity.—S. M. LEVENSON

The Efficiency of Digestion in Gastrectomized Patients. R. Nicolaysen and R. Ragård. *Scandinav. J. Clin. & Lab. Investigation* 7: 271, 1955.

This paper is a report of an approximately 14-day study of nitrogen balance and fat absorption in 15 patients in whom total gastrectomy had been performed for carcinoma some 3 to 43 months earlier. In addition, in 10 patients a part of the pancreas had been removed. All but one were ambulatory and were living at home before they were called in for the study. No signs of metastases were found at this time.

A weighed mixed diet averaging 1410 cal/day (range 840–2100) was fed. In all but six patients there was a distinctly negative nitrogen balance. Although about 88 per cent of the ingested fat was absorbed, there was evidence of reduced absorption.

As the authors indicate, the negative nitrogen balance was probably due to the inadequate caloric intake. The excess fecal fat plus the comparatively low intake of fat-soluble vitamins leads the authors to suggest that totally gastrectomized patients might benefit from fat-soluble vitamin supplementation. Presumably the intake resulted from an *ad libitum* diet, although this is not specifically stated, and nothing is said about weight changes.—S. O. WAIFE

The influence of emotions and behavioral patterns upon gastric secretory activity has received much attention. Studies on human subjects with gastric fistulae have provided a wealth of information in terms of which psychophysiological reactions and disorders are more clearly comprehended.

Behavior and Gastric Secretion: The Study of an Infant with a Gastric Fistula. F. Reichsman, G. L. Engel, and H. L. Segal. *Am. J. Dis. Childhood* 90: 491, 1955 (Soc. Trans.).

Physiologic, behavioral, and psychologic observations were made on a 16-month-old infant with congenital atresia of the esophagus in whom a gastric fistula had



been established on the third day of life. Over five months, during which she was hospitalized on the pediatric service, the child was studied in 59 experiments, each lasting two to four hours. Behavioral observations were recorded in detailed protocols by the experimenter who aspirated the gastric contents, as well as by an investigator who observed through a one-way screen the child and her transactions with the experimenter. Approximately 600 specimens of gastric secretion were examined as to appearance, total volume, pH, concentration, and secretion rate of free and combined HCl, and concentration and rate of pepsin secretion. Only the secretion rates of total HCl were reported.

The mean rate of total HCl secretion (meq/min) during depression is less than one-half than that during irritation, contentment, and joy ($P < 0.001$) and about one-fourth of the rate during rage ($P < 0.001$). During rage, secretion is significantly higher than during all other affects at the 1 per cent or at the 0.1 per cent level, except for the comparison with irritation, which is significant at the 2 per cent level. There are no significant differences between the other affects.

Thus, at this level of development, the secretion of HCl by the stomach is well integrated into the total behavioral activity of this infant. Affective states, be they pleasurable or unpleasurable, which are expressive of active communication with the outside world, are associated with rising secretion rates of HCl. The affect of "depression," in which communication with the environment is reduced or almost completely absent, is associated with decrease or cessation of gastric secretion. The authors regard these data as providing experimental support of the psychoanalytic theory of the oral phase of development.—J. N. ETTELDORF

Observations on "Unexplained" Chronic Diarrhea in Early Childhood. D. G. Prugh and H. Shwachman. *Am. J. Dis. Childhood* 90: 496, 1955 (Soc. Trans).

In the course of studies of gastrointestinal disorders in infancy and childhood, a group of cases has been identified which show continuing diarrhea related to psychophysiological disturbance in gastrointestinal function. Symptoms tend to appear after the first six months of life and to continue at least into the second or third year. These cases appear to be distinct from idiopathic celiac disease, without the gastrointestinal absorptive defect and the metabolic reverberations which characterize that illness. Localized structural change, as in prolonged ulcerative colitis, does not occur in these patients, and careful physical and laboratory studies reveal no local or systemic abnormalities of immediate etiologic significance. Dietary and other traditional methods of treatment have been of limited value in the management of this type of disturbance. Present studies indicate that diarrhea in this group of infants and small children tends to appear in settings of family crisis or in relation to exacerbations of emotional conflict on the part of parents, with associ-

ated changes in the handling of these children. Genetic and somatic factors, such as the pattern of inherited autonomic response to stress and incidental physical illness involving the gastrointestinal tract, appear to play a role in the predisposition to these disorders.

A group of 20 cases is presented, exhibiting diarrhea of the type described. Detailed observations are summarized regarding the type of predisposition in child and parents, the precipitating factors operating to disturb "emotional homeostasis," the nature of psychophysiological derangements, and the family circumstances which appear to lead to perpetuation of these disorders. Charts are employed to indicate correlations between significant psychologic and physiologic data. A program of pediatric management, involving a supportive psychological approach, is described, which can lead to successful resolution of this symptom picture.—J. N. ETTELDORF

It is not generally appreciated that native proteins can be absorbed from the gastrointestinal tract with no essential molecular alteration or hydrolysis. That such absorption does occur has been clearly demonstrated and has now been quantitated. Sensitization to native proteins absorbed in higher concentration during or after diarrheal states or impaired utilization of such proteins may be of some clinical moment.

The Gastrointestinal Absorption of Unaltered Protein in Normal Infants and in Infants Recovering from Diarrhea. F. L. Gruskay and R. E. Cooke. *Pediatrics* 16: 763, 1955.

The authors review briefly the qualitative evidence that ingested native protein may be absorbed from the gastrointestinal tract and that the amount entering the blood stream may increase during gastrointestinal disorders. Data of a quantitative nature are lacking.

With an immunochemical technique, quantitative determinations of a serum concentration of egg albumin were made following the ingestion of 1 g/kg of albumin in normal infants and in infants recovering from diarrhea. This study was conducted in order to correlate gastrointestinal absorption of protein with possible sensitization.

In one to two hours after ingestion of egg albumin, demonstrable quantities were present in the serum of control children, ranging from 0.45 to 73 μg per ml of serum. The levels of albumin in the serum of infants recovering from diarrhea in the absence of hemoconcentration was significantly higher and ranged from 4 to 53 μg per ml of serum. In 7 or 8 infants who had demonstrated an increased absorption of egg albumin during diarrhea, there was a significant decrease in the concentration during the convalescent stage.

The elevated concentrations of native protein were attributed to three possible mechanisms: (1) reduced destruction, (2) decreased excretion, (3) increased absorption of unaltered protein. The authors feel that the latter is more likely. Schloss has suggested that

increased absorption is possible because of hyperemia. Others have suggested it is the result of decreased degradation of the protein. Godlowski has suggested an altered capacity of the lymphoid layer of the lamina propria of the intestine to immobilize protein transport.

These observations of an increased absorption of protein during diarrhea, although egg albumin is of smaller molecular size than casein or lactalbumin, indicate to the authors that milk products such as Nutramigen® which are free of whole protein, should be preferred to cow's milk during the recovery phase of diarrhea—
J. N. ETTELDORF

The availability of a dependable and simple test to demonstrate impairment of absorption by the small intestine would represent an important adjunct to the study of many nutritional disorders. Further clinical trials with the test described below are in order.

The d-Xylose Tolerance Test: A Measure of Intestinal Absorption in Normal and Dystrophic Infants. M. G. Wolfish, G. J. Hildick-Smith, J. H. Ebbs, M. L. Connell, and A. Sass-Kortsak. *Am. J. Dis. Childhood* 90: 609, 1955 (Soc. Trans.).

It has been shown that in adult malabsorption syndromes, the xylose tolerance test is a useful measure of absorption and has certain advantages over the customary glucose tolerance test. In the present study, the value of this test was explored in infants.

d-Xylose was given in a dose of 0.5 g/lb of body weight (1.1 g/kg), with a maximum dose of 25 g as a 10 per cent aqueous solution, in the fasting state. Blood levels of xylose were obtained at 0, 1, 2, and 5 hours after the test dose.

A group of 55 normal infants was studied to obtain the range of normal tolerance. The results obtained in this group were fairly consistent. The blood

xylose levels rose to at least 30 mg per 100 ml within two hours; all except four rose over 35 mg per 100 ml.

These results were compared to those obtained in 40 infants suffering from dystrophy and suspected to have malabsorption. These included cases of celiac disease, fibrocystic disease, milk allergy, dystrophy following various infections, dystrophy due to insufficient nutrition, and dystrophy of unknown etiology.

Glucose and vitamin A tolerance tests were also performed on this group of dystrophic infants, either immediately preceding or following the xylose tolerance test. The results obtained by these three tests of absorption were compared. In a smaller group of patients the tolerance tests were repeated during the course of their illnesses, and changes in their tolerances were noted.

The xylose test was "flat" in celiac disease and in other conditions where malabsorption may be a factor. This test was consistently normal in conditions such as fibrocystic disease and dystrophy due to insufficient nutrition where malabsorption of monosaccharides is not part of the disturbance.

The results of glucose tolerance tests were much less uniform in these groups. It would appear that the xylose tolerance test is a useful tool in the study of malabsorption syndromes in infancy.—J. N. ETTELDORF

Diarrhoea Due to Phenolphthalein. J. M. French, R. Gaddie, and N. Smith. *Lancet* 1: 551, 1956.

Two cases of chronic diarrhea due to self-medication with phenolphthalein are described. In one of the cases fat absorption was impaired.

Both initially denied taking phenolphthalein, and the method of its detection is outlined. Attention is drawn to the possible importance of self-induced diarrhea as a clinical syndrome and a further cause of steatorrhea.—F. E. HYTTEN

