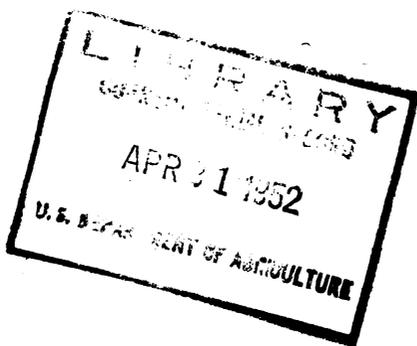


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UNITED STATES DEPARTMENT OF AGRICULTURE

Bureau of Human Nutrition and Home Economics

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³FOLIC ACID CONTENT OF FOODS;
Microbiological assay by standardized methods
and compilation of data from the literature,

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SUMMARY

Two types of investigation were carried out to provide information on the folic acid content of foods: (1) A systematic application of standardized microbiological procedures in the laboratory analysis of foods; and (2) a compilation of data and summation of available information from the literature and other sources.

The laboratory procedures for standardized microbiological methods using *Lactobacillus casei* and *Streptococcus faecalis* for assay of folic acid in foods are described in detail in this report.

As a measure of the reliability of these assay methods, exact confidence limits, coefficients of variation, and recoveries of added folic acid were determined. The exact confidence limits were 6.5 percent of the mean for *L. casei* data and 5.6 percent of the mean for *S. faecalis* data and represent errors to be expected from individual assays. The coefficients of variation of the data from repeated assays with standard spinach samples were 10.53 and 8.85 for *L. casei* and *S. faecalis*, respec-

tively, and with standard yeast residuals 8.00 and 12.00, respectively; these represent the reproducibility of the assay over a series of assay periods. On the basis of the amount of folic acid in the food sample and folic acid added as a standard solution, recoveries were 96.9 percent of the total and 92.9 percent of the added folic acid with *L. casei*, and 97.3 percent of the total and 94.8 percent of the added folic acid with *S. faecalis*.

Studies to improve the extraction of samples and/or treatment with enzymes showed that the standardized procedure, extracting at pH 7 and incubating with chicken pancreas, is the most satisfactory of the combinations of conditions and enzymes tested.

Two summary tables on the folic acid content of foods are given. One table contains the detailed results of the above laboratory analysis of market-purchased, locally produced, or special food items; the other, the compiled data from the first table, literature, and other sources.

INTRODUCTION

Extensive reviews on folic acid and related compounds are available. These deal with such various aspects as historical development, isolation, and synthesis (62, 96, 110, 128),¹ nutritional significance (64, 69, 72), clinical uses (1, 33, 73, 74, 95, 122, 129), physiology (32, 40, 82), chemistry (2, 70), biochemistry (3, 71, 125), antagonists for folic acid (63), analytical methods (37, 51, 108), and problems related to assay (105). Some reviewers have also noted briefly references to the literature on the folic acid content of foods and have listed some of the early data (3, 64, 74, 96, 128).

Folic acid has been shown to be identical or related to a number of such factors as: Factor U, necessary for the growth of chicks (109); vitamin B_c (56), a factor in liver extract necessary for chick growth and prevention of the development of anemia; the "L. casei factor," formerly "norite eluate factor" (106), essential for the growth

of *Lactobacillus casei*; the factor necessary for the growth of *Streptococcus lactis* R (86); and vitamin M (35) the antianemia factor for monkeys.

Folic acid is known as pteroylglutamic acid on the basis of its chemical structure, having one molecule of glutamic acid linked to *p*-aminobenzoic acid and a pteridine group. Other compounds contain additional numbers of glutamic acid radicals linked through gamma peptide bonds (16, 88, 93, 94). Naturally occurring compounds of one, three, and seven molecules of glutamic acid are known. The possibility of the existence of other naturally occurring forms is recognized. Simpler compounds not containing glutamic acid, such as pteric acid and formyl pteric acid, may occur naturally. These are not biologically active and are active microbiologically only for certain strains of *S. faecalis*. Microbiological methods of assay may differentiate among these folic acid-related compounds, depending in part upon the conditions of extracting food samples.

The bioassay employing the monkey, rat, or

¹ Italic numbers in parentheses refer to Literature Cited, p. 112.

chick (36, 94) measures the total folic acid. In addition to growth tests, some work has been done with various blood-response tests. These methods are useful in studies of biological function of the vitamin and in checking the results of other methods of assay of foods, but are limited for extensive use in routine analyses. The microbiological assay has advantages in application and in economy, and has been widely used. Hydrolysis by enzymes converts the multiple glutamic acid compounds to the monoglutamic acid compounds (13, 14, 68, 80, 116) in which form it is active for both *L. casei* and *S. faecalis*, the organisms used in the microbiological assay for the vitamin.

The Association of Official Agricultural Chemists has adopted as first action (12) a standardized procedure using *S. faecalis*, based on the results from three collaborative studies on the microbiological assay. Results from these studies were compared with results from bioassay. Chemical assays have been developed for the determination of folic acid in purified or highly concentrated materials (48, 57, 79, 119, 121). Although requiring further development and study, chemical methods have been reported recently for the estimation of folic acid in natural products (5, 8).

Proper evaluation of data on foods compiled from various sources depends upon the proper interpretation of the assay methods employed. In an extract of the sample, *S. faecalis* responds mainly to the unconjugated form, and *L. casei* to both the triglutamic acid compound and the unconjugated form. Certain enzymes convert conjugated forms of folic acid to the monoglutamic acid compound utilized by both of the microorganisms mentioned. The extent to which the conjugates may be converted under the conditions of extraction, choice of organism, and the enzyme system used determine the reported folic acid content. Naturally occurring enzymes in some food samples aid the extraction of folic acid and hydrolysis of conjugates. Heating to destroy these enzymes and extraction without further

enzyme treatment probably yields an extract in which "free" folic acid may be determined. The pH of the extracting medium could well determine the amount of monoglutamic and triglutamic acid compounds of folic acid in such an extract. Hence the term "free" folic acid has a rather vague meaning. Free folic acid content may be important for conditions of impaired digestion.

Enzyme activity is an important factor in the determination of total folic acid. In addition to controlled conditions of the extractant, such as pH (14) and temperatures and times of incubation (55), the possible effect of naturally occurring inhibitors (54, 84) on enzyme activity, should also be recognized.

Enzymatic treatment of the samples has been used to obtain extracts containing all the folic acid in forms utilized by micro-organisms, measurable as the "total" folic acid content. To that end, takadiastase and papain of earlier methods of assay have not proved satisfactory. Enzyme preparations of kidney, liver, and pancreas have been used more successfully. Hog kidney and chicken pancreas preparations have had a wider recent application (83, 91). Chicken pancreas preparations have been found to have relatively high activity (30) on conjugates of folic acid and to be subject to less inhibition by other substances than are hog kidney preparations.

Recognition of folic acid as a factor required for growth, reproduction, and prevention of anemia in animals and for treatment of several types of anemia in human beings, pointed to the need for information on the folic acid content of food. Such information would assist in appraising the nutritive value of diets and in estimating probable human requirements. The study reported in this publication was made to summarize present information on folic acid content of foods and to extend this information by systematically applying standardized analytical procedures to a large number of foods.

PART I. LABORATORY ANALYSIS OF FOODS

The laboratory work started with a study of the microbiological methods to standardize the procedures and to determine their reliability and reproducibility. Using fruits and vegetables as they appeared in season on the local retail markets and other foods and related food items obtained on the market or through sources² having available samples of known history, analyses were carried out with standardized microbiological procedures with *Lactobacillus casei* and *Streptococcus faecalis* for total folic acid content and, in most cases, for the free folic acid content. Foods common to the southern and southwestern areas of the United States were analyzed at the laboratories of the Texas Agricultural Experiment Station, using products purchased on the retail market or grown locally. These analyses were carried out following the standardized microbiological procedure for the use of *L. casei* for total folic acid content. Standard reference samples of dried spinach and yeast residuals were exchanged between laboratories of the Bureau of Human Nutrition and Home Economics and of Texas to check on the uniformity of the application of the analytical procedures.

In all cases, the fresh foods were obtained in season in quantities large enough to assure a fair sample of the lots available. The edible portion was prepared and reduced to at least six representative subsamples of approximately 200 gm. each. These were used for assay and storage. Stored foods were sealed in tins and held at -40°C . at the laboratories of the Bureau and at -20°C . at the Texas Agricultural Experiment Station. Dry foods were treated likewise, except that 50-gm. portions were taken as representative subsamples.

Analytical Procedures

Moisture and fat

Moisture was determined on weighed 1- to 10-gram samples of food depending on the expected moisture and fat content, and dried to constant weight in a vacuum oven at 50°C ., in aluminum foil moisture dishes. Fat was extracted from weighed dried samples under continuous extraction with ethyl ether in a Soxhlet apparatus for

² Grain Branch of the Production and Marketing Administration and the Bureau of Plant Industry, Soils and Agricultural Engineering, Agricultural Research Administration, United States Department of Agriculture.

18 hours. After the ether was evaporated the fat was dried for 2 hours in the vacuum oven and weighed.

Folic acid

The microbiological assay for folic acid followed the procedure used in the 1948-49 Association of Official Agricultural Chemists collaborative study (44, 45) with minor modifications.

Assay media.—The composition of the assay media for the two test organisms used are shown in table 1. Reagents employed in making media were as follows:

Acid-hydrolyzed casein.—100 gm. of vitamin-free casein were mixed with 500 ml. of constant-boiling HCl (ca. 5 N HCl) and refluxed 8 hours. The HCl was removed from the mixture by distillation under reduced pressure until a thick sirup remained. The sirup was dissolved in distilled water and concentrated again in the same manner. The resulting sirup was redissolved in distilled water, adjusted to pH 3 (indicator paper) with N NaOH, and sufficient water added to bring the volume to approximately 600 ml.; 40 gm. of Darco G-60 were added to the solution, stirred several hours, and then filtered. The treatment was repeated for 1 hour if filtrate did not appear colorless. The pH of filtrate was adjusted to 6.8, and sufficient water was added to bring the volume to 1 liter and stored under toluene at 5°C . Solutions were discarded if yellow after storage.

(1 ml. \approx 100 mg. of hydrolyzed casein.)

TABLE 1.—Composition of media
for assay of folic acid

Constituent	Amount for 1 liter of double strength medium	
	<i>L. casei</i>	<i>S. faecalis</i>
Acid-hydrolyzed casein	100 ml.	100 ml.
DL tryptophan	20 ml.	20 ml.
Adenine-guanine-uracil	50 ml.	50 ml.
Xanthine	50 ml.	50 ml.
Asparagine	60 ml.	60 ml.
Vitamin mixture	100 ml.	100 ml.
Tween "80"	20 ml.	20 ml.
Salts solution A	10 ml.	-----
Salts solution B	10 ml.	10 ml.
Dextrose, anhydrous	40 gm.	40 gm.
Sodium acetate $\cdot 3\text{H}_2\text{O}$	64 gm.	-----
Sodium citrate $\cdot 2\text{H}_2\text{O}$	-----	46 gm.
K_2HPO_4	-----	6.2 gm.
Glutathione	5 mg.	5 mg.
L cysteine hydrochloride	500 mg.	500 mg.
Manganese sulfate	20 ml.	20 ml.

Tryptophan solution.—5 gm. of DL tryptophan were dissolved in 15 to 20 ml. of 1 N HCl and sufficient water was added to make 250 ml. Solutions were stored up to one week under toluene at 5° C.

(1 ml. \approx 10 mg. of L tryptophan.)

Adenine, guanine, uracil solution.—0.2 gm. each of adenine sulfate, guanine hydrochloride, and uracil were dissolved with the aid of heat in 10 ml. of 20-percent HCl, and sufficient distilled water was added to make 1 liter and stored under toluene at 5° C.

(1 ml. \approx 200 μ g. (micrograms) of each.)

Xanthine solution.—0.4 gm. of xanthine was dissolved in 20 ml. of concentrated NH_4OH with heat. Distilled water was added to make 1 liter and stored under toluene at 5° C.

(1 ml. \approx 400 μ g. of xanthine.)

Asparagine solution.—10 gm. of L asparagine monohydrate were dissolved in water, diluted to 1 liter and stored under toluene at 5° C.

(1 ml. \approx 10 mg. of L asparagine monohydrate.)

Acetate buffer, pH 4.5.—18.75 gm. (19.8 ml.) of glacial acetic acid and 38.65 gm. of sodium acetate ($\text{CH}_3\text{COONa} \cdot 3\text{H}_2\text{O}$) were dissolved in distilled water, diluted to 500 ml., and stored at room temperature.

Vitamin-mixture solution.—20 mg. of *p*-aminobenzoic acid, 80 mg. of pyridoxine hydrochloride, 8 mg. of thiamine hydrochloride, 16 mg. of calcium pantothenate, and 16 mg. of nicotinic acid were dissolved in approximately 200 ml. of distilled water. Biotin solution to furnish 400 μ g. of biotin, 20 mg. of riboflavin (dissolved in 200 ml. of 0.02 molar CH_3COOH), and 80 ml. of sodium acetate buffer, pH 4.5 were added. The volume was made to 2 liters with distilled water and stored at 5° C. under toluene in a dark glass-stoppered bottle.

(1 ml. \approx 10 μ g. of *p*-aminobenzoic acid, 40 μ g. of pyridoxine hydrochloride, 4 μ g. of thiamine hydrochloride, 8 μ g. of calcium pantothenate, 8 μ g. of nicotinic acid, 0.2 μ g. of biotin, and 10 μ g. of riboflavin.)

"Tween" solution.—2.5 gm. of "Tween 80"³ were dissolved in warm water (45° C.), diluted to 500 ml., and stored under toluene at 5° C.

(1 ml. \approx 5 mg. of Tween.)

Salts solution A.—10 gm. of KH_2PO_4 and 10 gm. of K_2HPO_4 were dissolved in distilled water,

³ Polyoxyethylene sorbitan monooleate, Atlas Powder Co., Wilmington, Del.

diluted to 100 ml., and stored under toluene at room temperature.

(1 ml. \approx 100 mg. of KH_2PO_4 and 100 mg. of K_2HPO_4 .)

Salts solution B.—20 gm. of $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$, 1 gm. of NaCl, 1 gm. of $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$, and 750 mg. of $\text{MnSO}_4 \cdot \text{H}_2\text{O}$ were dissolved in distilled water; 1 ml. of concentrated HCl was added, diluted to 500 ml., and stored under toluene at room temperature.

(1 ml. \approx 40 mg. of $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$, 2 mg. of NaCl, 2 mg. of $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$, and 1.5 mg. of $\text{MnSO}_4 \cdot \text{H}_2\text{O}$.)

Manganese sulfate solution.—5 gm. $\text{MnSO}_4 \cdot \text{H}_2\text{O}$ were dissolved in distilled water, diluted to 500 ml., and stored at room temperature.

(1 ml. \approx 10 mg. of $\text{MnSO}_4 \cdot \text{H}_2\text{O}$.)

Assembling the media.—All liquids were combined and approximately 200 ml. of distilled water added. The solid ingredients were dissolved in the liquid and the pH adjusted to 6.8 with NaOH or HCl. The manganese sulfate solution was then added and final volume was brought to 1 liter with distilled water. The mixture was stored under toluene at 5° C.

Reagents.—Following are the reagents which were required for the assay procedure.

M/5 phosphate buffer, pH 7.2.—27.23 gm. of KH_2PO_4 and 5.60 gm. of NaOH were dissolved in water and diluted to 1 liter. Fresh solution was made each time of assay.

0.9-percent sodium chloride.—9 gm. of NaCl were dissolved in water and diluted to 1 liter. 10-ml. portions were placed in test tubes, plugged with absorbent cotton, and autoclaved 15 minutes at 15 pounds steam pressure.

Bromthymol blue indicator saturated solution.—1 gm. of bromthymol blue was suspended in 16.5 ml. of N/10 NaOH and the volume brought to 250 ml. with distilled water.

Solubilized liver extract.—5 gm. of Bacto liver were suspended in 100 ml. of distilled water. The mixture was held at 50° C. for 1 hour and at 80° C. for 5 minutes, filtered, and the filtrate stored under toluene in a glass-stoppered bottle at 5° C.

Standard folic acid solution.—The purity of standard folic acid used in preparing standard solutions was determined by ultraviolet absorption of solutions in N/10 NaOH at 365 μ using the $E_{1\text{cm}}^{1\%}$ value of 199 (9). From the data, the

several lots of folic acid dried in the vacuum oven at 100° C. for several hours were 94.0-, 96.8-, 97.8-, and 100-percent folic acid. To prepare standard solutions, a weighed quantity of approximately 10 mg. of standard folic acid was dissolved in and made up to 1 liter volume with 0.01 N NaOH made up in 20-percent alcohol. This stock solution was kept in a dark glass-stoppered bottle at 5° C.; the unused portion was discarded after 6 months. A second stock solution containing exactly 250 millimicrograms of folic acid per ml. was prepared from the original solution by diluting a calculated volume, taking into account the concentration of the first solution corrected for purity of the standard, with 0.01 N NaOH in 20-percent alcohol. This solution was stored under identical conditions and the unused portion discarded after 2 months. Fresh solutions for each determination were made from the second stock in distilled water to contain 10.0, 1.0, and 0.20 millimicrograms of folic acid per ml.

Additional materials.—Additional materials needed for the assays were prepared as follows:

Enzymes.—For the chicken pancreas enzyme preparation, fresh chicken pancreas was ground in the Waring blender with acetone, and the suspended material rinsed into a flask with acetone. The volume of acetone used amounted to five times the weight of the fresh pancreas. The mixture was placed in the refrigerator overnight. The fine material was squeezed through cheesecloth, filtered, washed with acetone, and air-dried. The dry material was ground in a Wiley mill through a 60-mesh sieve and stored at 0° C.

Test organisms.—The test organisms used for the assays were a culture of *Lactobacillus casei* known to be sensitive to folic acid and a culture of *Streptococcus faecalis* R (ATCC 8043).⁴ A culture of *L. casei* (ATCC 7469) did not give regular growth responses to increments of folic acid.

Culture media.—Agar culture media for maintenance of the cultures were prepared as follows: For *L. casei*, 1.5 gm. of Bacto beef extract, 0.5 gm. of Bacto yeast extract, 2.5 gm. of Bacto peptone, 1.25 gm. of Bacto tryptone, 0.5 gm. of dextrose, 7.5 gm. of agar, and 5 gm. of sodium ace-

tate · 3H₂O were made up to 500 ml. of solution with distilled water; for *S. faecalis*, 5 gm. of Bacto tryptone, 5 gm. of Bacto peptonized milk, 6 gm. of agar, and 100 ml. of filtered commercially canned tomato juice were made up to 500 ml. of solution with distilled water. The agar medium was steamed for about 10 minutes to dissolve the agar, tubed in 10-ml. amounts, plugged with absorbent cotton, and sterilized at 15 pounds steam pressure for 15 minutes. Twenty-four hour stabs of *L. casei* and *S. faecalis* subcultured from 24-hour broth cultures, incubated at 37° and 30° C., respectively, were stored in the refrigerator as stock cultures. These stock cultures were prepared every 2 weeks.

Broth culture media tubes were prepared with 5 ml. of the assay medium (table 1), 5 ml. of distilled water, plus 1 drop of solubilized liver extract, plugged with absorbent cotton and sterilized at 15 pounds steam pressure for 15 minutes. Cells were transferred from stock cultures to the broth medium and incubated 18 hours at 37° and 30° C. for *L. casei* and *S. faecalis*, respectively. Cells for use as the inoculum were grown in broth media twice on successive days. To prepare the inoculum the prepared broth media tubes were centrifuged to throw down the cells and the liquid decanted. The cells were resuspended in 10 ml. of 0.9-percent sterile salt solution, the tubes were re-centrifuged, and this washing operation was repeated. The cells suspended in 10 ml. of 0.9-percent sterile salt solution for a third time were used for inoculum.

Food sampling.—For all foods, both fresh and dry, each weighed portion for total folic acid assay was withdrawn from a separate subsample. For assay, the entire fresh subsample, unthawed if frozen, was ground three times through a food grinder. The entire dry subsample of food was ground in a Wiley mill through a 60-mesh sieve, unless the properties of the material made it more desirable to use a sieve permitting larger particle size. The quantity of food used for assay depended both on the estimated folic acid content and the homogeneity of the sample. In the interest of better sampling, at least 1 gm. of dry material or 10 gm. of fresh material were taken.

Assay procedure.—Although the laboratory was not dark, and incandescent lights were permitted, the samples and solutions were not exposed to direct light.

A preliminary run was often used to find the range in which to determine the folic acid content.

⁴ *L. casei* obtained from Laura M. Flynn, Assistant Professor, Department of Agricultural Chemistry, University of Missouri, and Associate Referee on folic acid for the Association of Official Agricultural Chemists Collaborative Studies. *S. faecalis* obtained from the American Type Culture Collection, Washington, D. C.

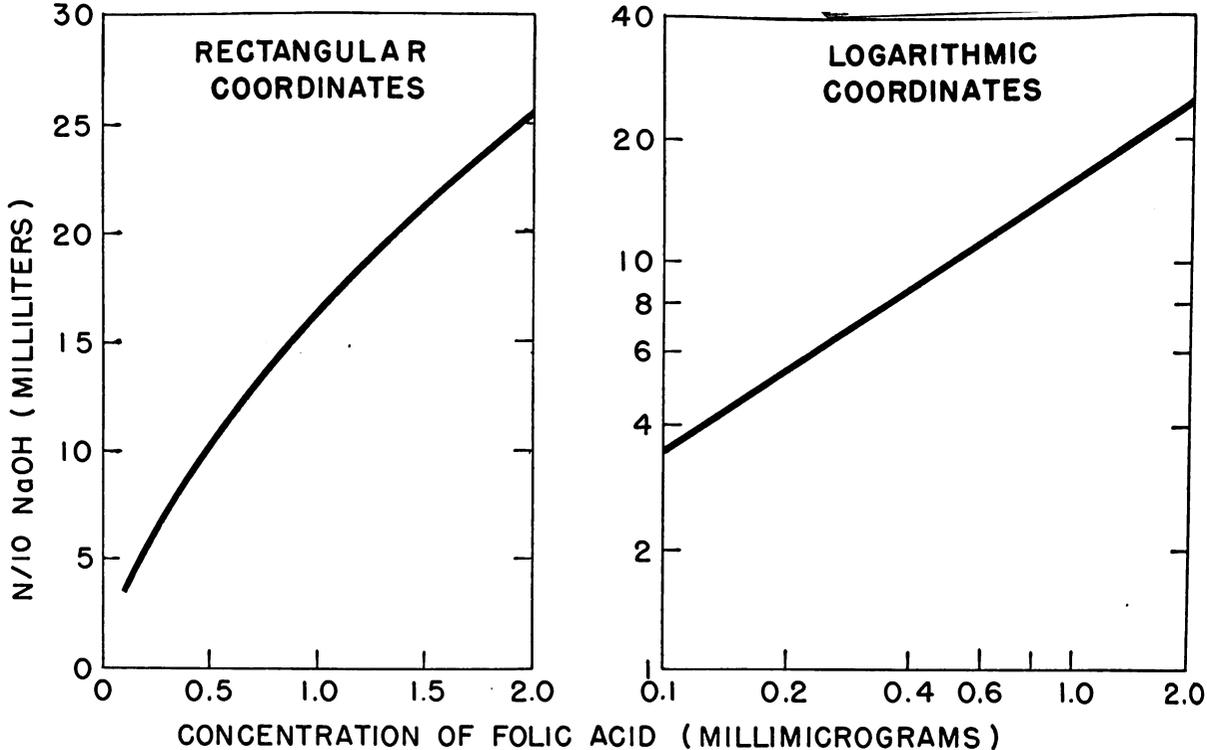


FIGURE 1.—Standard growth curves for *L. casei*.

Three samples of food were weighed, two to be treated with the enzyme preparation for total folic acid and one untreated for the free folic acid. A blank for the enzyme and a reference sample were included in every assay or group of assays. In Bureau of Human Nutrition and Home Economics laboratories a quantity of ground, dried spinach was prepared and stored in the refrigerator for use with each assay as a reference sample; at Texas, yeast residuals was used as the reference sample.

The weighed sample was transferred to the blender containing 40 ml. of M/5 phosphate buffer pH 7.2, approximately 35 ml. of water were added, and the mixture was blended for 3 minutes. The suspended material was rinsed quantitatively into a 500-ml. wide-mouth Erlenmeyer flask using approximately 100 ml. of water but keeping the total volume under 200 ml. Several drops of caprylic alcohol were added to prevent foaming, and the mixture was autoclaved for 15 minutes at 15 pounds steam pressure. When the mixture was cool, 20 mg. of chicken pancreas enzyme preparation, first wet with a drop or so of glycerol and suspended in 5 ml. of water, were added.

Larger amounts of the enzyme were used for material high in folic acid content, such as liver or yeast—100 mg. of enzyme per gram of ma-

terial, dry weight. The enzyme was omitted at this point if free folic acid was being assayed. After adding a few milliliters of toluene the mixture was incubated for 24 hours at 37° C. After incubation the flasks and contents were autoclaved briefly, 5 minutes at 15 pounds. After the mixture was cooled, the volume was brought to 250 ml. in a volumetric flask, mixed, and filtered through a dry filter paper. Aliquots of the filtrate were diluted to the desired concentration such that for *L. casei* there would be 0.2 to 0.5 millimicrograms of folic acid per ml., and, for *S. faecalis*, 0.5 to 2.0 millimicrograms of folic acid per ml.

For the *L. casei* procedure, 13 levels in triplicate were used to establish the growth response to increasing amounts of standard folic acid and 5 levels in triplicate for the sample. Culture tubes with plastic screw tops were used. For the standard curve, 0.0, 0.0, 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.8, 1.0, 1.0, 2.0, and 3.0 millimicrograms of standard folic acid were placed in successive test tubes by pipetting the appropriate standard solutions. Distilled water was added by pipette to bring the volume to 5 ml., and 5 ml. of the assay medium were added by pipette. For the sample, 1 to 5 ml. of the sample solution of the proper dilution were added to successive test tubes, the volume brought

to 5 ml. with distilled water, and 5 ml. of the assay medium were added. If a pipetting machine was used, the tubes did not need to be agitated for mixing.

The tubes were autoclaved 10 minutes at 15 pounds steam pressure. When cool, they were inoculated aseptically with 1 drop of the inoculum in each tube. In the series of tubes for the standard curve, the first tube was not inoculated and was used as a check on the second tube to show that little or no growth had occurred. Tubes were incubated for 72 hours in a water bath regulated at 37° C. The growth response was determined by titrating the lactic acid produced with N/10 standard NaOH, using 3 drops of bromthymol blue indicator solution.

For *S. faecalis*, the procedure was essentially the same, except that 12 tubes were used in triplicate for the standard curve. 0.0, 0.0, 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 4.0, 5.0, 5.0, and 10.0 millimicrograms of standard folic acid were placed in successive test tubes. Incubation of the tubes was for 72 hours at 30° C., and the titration used 6 drops of bromthymol blue indicator solution.

Standardization of Growth Curves

It was established that the rate of lactic acid production had become very small at the end of 72 hours of incubation. Plotted on log-log coordinate paper (fig. 1) the *L. casei* data showed a linear relationship between the concentrations of N/10 NaOH and folic acid or sample. Since the slopes of the standard and sample curves were found to be very nearly the same, the amount of folic acid in the samples was easily calculated from values read near the means of the standard and sample curves. It has been found to be good practice to have at least three points of the sample curve in the range of 0.2 to 1.0 millimicrograms of folic acid in order to establish the sample curve. Outside of this range, the results would be considered preliminary and useful only for estimating correct dilutions to be made for another assay.

Linear relationships for *S. faecalis* data were not easily obtained. The data may be plotted on rectangular coordinate paper to give sigmoid curves from which the folic acid content of the sample may be determined, preferably at points

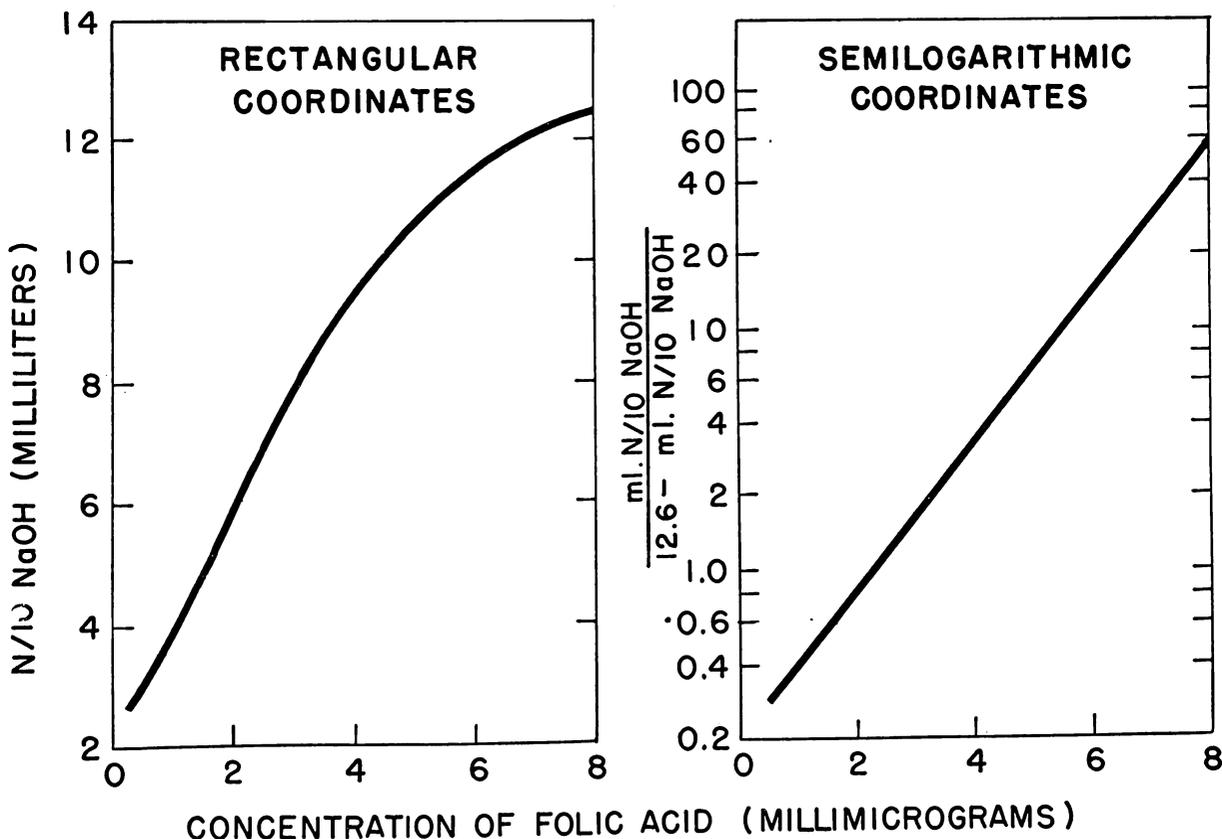


FIGURE 2.—Standard growth curves for *S. faecalis*.

in the range of 1.0 to 5.0 millimicrograms of folic acid. The data of *S. faecalis* were found to be similar to that of an autocatalytic monomolecular reaction (19). From the data of 12 standard curves it was found that $\log(Y/(12.6 - Y)) = a + bX$ was linear (fig. 2, p. 7). The value of the constant 12.6 represented the estimated average maximum titration with N/10 NaOH; a and b , the customary designations of linear equation constants for the intercept and slope, respectively. Y represented the titrations with N/10 NaOH for corresponding values of X , the concentrations of folic acid. The values for $Y/(12.6 - Y)$ and the corresponding logarithms of $Y/(12.6 - Y)$ were tabulated to facilitate the plotting and calculating of data. Thus plotting of $Y/(12.6 - Y)$ against X on semilogarithmic paper gave straight lines.

Since concentration values of the standard folic acid and of the sample were plotted on arithmetic scale for the *S. faecalis* data, the standard and sample lines were not necessarily parallel as were the lines derived from *L. casei* data. Coding of the X values for data from samples analyzed with *S. faecalis* was easily done by inspection, using whole numbers to multiply or divide. (As shown in the example on calculations, table 2, the X values were divided by 2 in order to obtain values of approximately the same order of magnitude for the slopes of the curves.) Whether the values of X were coded or not, this method of obtaining linearly related data has avoided the errors encountered in trying to fit the curved lines to data plotted on rectangular coordinates. At least three points of the sample should fall within the range of 1.0 to 5.0 millimicrograms of folic acid to estab-

lish the sample curve, otherwise the data were considered preliminary and used to estimate correct dilutions to be made for another run. The amount of folic acid in the sample was calculated from the values read near the means of the standard and sample curves.

Calculation of Confidence Limits

Errors of the microbiological method have been calculated, using the method described by Bliss (15) to determine the limits of the data which would include the true value for the particular assay being investigated. Calculations of these limits required linear relationships, which was one of the reasons for establishing such a relationship for the *S. faecalis* data.

The equation establishing the straight line and the exact confidence limits as two hyperbolae was given as:

$$X_L = \bar{X} + C^2(Y - \bar{Y})/b \\ \pm t(s/b)C \sqrt{1/N + (Y - \bar{Y})^2/(B^2 - s^2t^2)}$$

In order that confidence limits for both the standard and the sample curves would be accounted for, the following equation was given:

$$X_L = \bar{X}_s - \bar{X}_u - C^2(\bar{Y}_s - \bar{Y}_u)/b_s \\ \pm t(s/b)C \sqrt{1/N_s + 1/N_u + (\bar{Y}_s - \bar{Y}_u)^2/(B^2 - s^2t^2)}$$

The terms used are:

X = folic acid concentrations in millimicrograms for the standard curve; concentration of the sample in milligrams for the sample curve. For *L. casei* data these were logarithms.

TABLE 2.—Example of calculation of confidence limits of assays

Terms	<i>L. casei</i>			<i>S. faecalis</i>		
	Standard	Sample	Combined	Standard	Sample	Combined
N -----	26	14	40	18	15	33
\bar{X} -----	-0.3122	0.4815	-----	2.3889	4.5	-----
\bar{Y} -----	.7918	.9307	-----	.1628	.1766	-----
S_{X^2} -----	3.457997	.876914	4.334911	38.277778	67.50	105.777778
S_{Y^2} -----	1.161560	.455143	1.616703	1.527819	4.064338	5.592157
S_{XY} -----	1.984029	.629540	2.613569	7.5424	16.5105	24.0529
b -----	.5738	.7179	.6029	.1970	.2446	.2274
B^2 -----	1.138436	.451947	1.575721	1.485853	4.038468	5.469629
s -----	.03104	.01632	.03283	.05122	.04470	.06286
$t (P=0.30)$ -----	1.059	1.083	1.051	1.071	1.079	1.055
C -----	1.0005	1.0005	1.0035	1.0010	1.0000	1.0005
X_L -----	-0.3122-0.4815+0.2304±0.0190= -0.5633±0.0190			2.3889-4.5+0.0607±0.1021= 2.4496-4.5±0.1021		
	Calculation: antilog -0.5633=0.2733			4.5÷9 mg. sample (coded) 9 mg. sample÷ 2.4496 millimicrograms folic acid		
	μg. folic acid/gm.=0.2733 limits±0.0123			μg. folic acid/gm.=0.2722 limits±0.0113		

Y = logarithms of the titrations with $N/10$ NaOH for *L. casei* data; logarithms of $Y/(12.6 - Y)$ for *S. faecalis* data.

x, y = deviations from X and Y .

$b = S_{xy}/S_y^2$ for slope of single regression line.

$S^2 = (S_y^2 - (S_{xy})^2/S_x^2)/N - 2$ for error variance.

t = value of t from a table of "Student's" distribution (42).

$B^2 = (S_{xy})^2/S_x^2$ measures variation in Y accounted for by slope of regression line.

$C^2 = B^2/(B^2 - s^2t^2)$ correction term for discrepancy between approximate and exact limits of confidence interval.

N = number of pairs of observations.

Subscripts refer to standard (s), sample or unknown (u), combined slopes of standard and sample curves (c).

An example of experimental data and of calculated values applied to the items in the equations is given in table 2 and illustrated in figure 3. The values of t , arbitrarily chosen at $P = 0.3$ given in the tables, were somewhat higher than values of t for $P = 0.3174$ where the percentage of nor-

mally distributed data would have been equivalent to one standard deviation from the mean. Hence the confidence limits, as calculated, were approximately one standard deviation from the mean. In the example, the percentage deviation from the mean value of *L. casei* data was 4.50; and from the mean value of *S. faecalis* data was 4.15.

The error term expressed in this way showed only the error to be expected from single assays and may be considered as a measure of the precision of procedures and techniques employed. In order to apply these calculations to a number of different foods, data were chosen from analyses of identical food samples assayed by *L. casei* and *S. faecalis* procedures. These summary data are shown in table 3 representing 55 assays among 26 different foods. In order to make a common basis for comparison, the limits were expressed in percent of the mean, which gave approximately the coefficient of variation. The difference between the mean error terms expressed in this way, 6.5 for the *L. casei* and 5.6 for the *S. faecalis* procedures, was not significant.

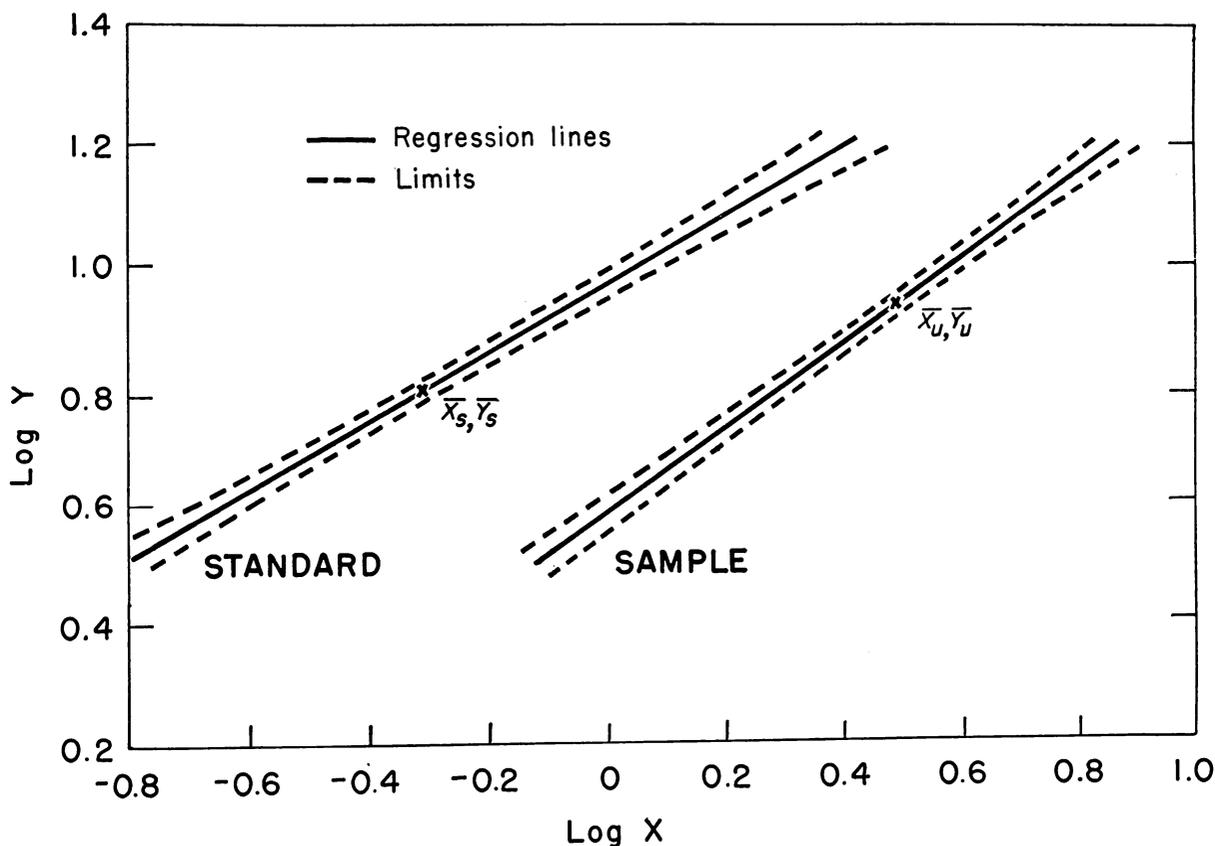


FIGURE 3.—Calculated confidence limits of *L. casei* data for standard and sample curves.

TABLE 3.—Confidence limits of folic acid values by *L. casei* and *S. faecalis* procedures

Sample	<i>L. casei</i>			<i>S. faecalis</i>		
	Mean	Confidence limits \pm	$CL \times 100/M$	Mean	Confidence limits \pm	$CL \times 100/M$
	$\mu g./gm.$			$\mu g./gm.$		
Beans, green.....	0.255	0.011	4.3	0.238	0.010	4.2
Beef.....	.0624	.0023	3.7	.0679	.0040	5.9
Beet greens.....	.315	.025	7.9	.505	.018	3.6
Brussels sprouts.....	.163	.008	4.9	.162	.015	9.2
Celery.....	.0665	.0059	8.9	.0715	.0027	3.8
Grapefruit.....	.0256	.0023	9.0	.0276	.0012	4.3
Hamburg.....	.0375	.0013	3.5	.0506	.0027	5.3
Honeydew melon.....	.0482	.0034	7.0	.0435	.0020	4.6
Kale.....	.464	.040	8.6	.411	.015	3.6
Lemon.....	.0454	.0044	9.7	.0397	.0025	6.3
Lime.....	.0439	.0031	7.1	.0390	.0034	8.7
Orange.....	.0572	.0044	7.7	.0425	.0035	8.2
Peach.....	.0199	.0010	5.0	.0215	.0008	3.7
Pear.....	.0276	.0027	9.8	.0319	.0010	3.1
Pineapple.....	.0183	.0020	10.9	.0167	.0010	6.0
Radish.....	.0419	.0028	6.7	.0385	.0037	9.6
Sausage.....	.0620	.0028	4.5	.0451	.0020	4.4
Soy flour.....	3.58	.13	3.6	3.98	.18	4.5
Squash.....	.0932	.0057	6.1	.122	.005	4.1
Strawberry.....	.0394	.0019	4.8	.0425	.0026	6.1
Sweet corn.....	.184	.009	4.9	.138	.005	3.6
Tangerine.....	.0619	.0075	12.1	.0480	.0013	2.7
Tomato.....	.0909	.0036	4.0	.0770	.0071	9.2
Turnip.....	.0332	.0012	3.6	.0381	.0024	6.3
Turnip greens.....	.529	.036	6.8	.472	.045	9.5
Veal.....	.0268	.0008	3.0	.0396	.0022	5.6

TABLE 4.—Coefficient of variation of folic acid values by *L. casei* and *S. faecalis* procedures

Sample	Folic acid content		Sample	Folic acid content	
	<i>L. casei</i>	<i>S. faecalis</i>		<i>L. casei</i>	<i>S. faecalis</i>
	$\mu g./gm.$	$\mu g./gm.$		$\mu g./gm.$	$\mu g./gm.$
Spinach.....	9.6	10.3	Yeast residuals.....	9.50	7.40
	10.3	10.5		8.75	7.92
	10.0	10.5		9.50	7.40
	9.6	10.0		9.38	7.50
	9.4	10.0		7.95	9.25
	11.0	11.1		8.40	10.02
	10.8	10.0		8.40	9.35
	10.0	10.8		7.70	10.02
	9.4	10.0		8.90	8.84
	8.6	8.4		7.80	9.00
	12.6	10.0			
	Mean.....	10.12		10.14	Mean.....	8.63	8.67
Standard deviation.....	1.066	.694	Standard deviation.....	.690	1.040
Standard error mean.....	.321	.209	Standard error mean.....	.218	.329
Coefficient of variation.....	10.53	6.85	Coefficient of variation.....	8.00	12.00

TABLE 5.—*Recovery of folic acid added to 1-gm. samples of dried spinach*

Organism	Folic acid in sample	Added folic acid	Number of samples	Calculated total folic acid	Found folic acid	Recoveries	
						Total	Added
	$\mu\text{ g./gm.}$	$\mu\text{ g./gm.}$		$\mu\text{ g./gm.}$	$\mu\text{ g./gm.}$	<i>Percent</i>	<i>Percent</i>
<i>L. casei</i> -----	10.31±0.40*-----	5.00	5	15.31	14.82±0.22*	96.8	90.2
		10.00	5	20.31	19.66±0.29	96.8	93.5
		15.00	5	25.31	24.55±0.35	97.0	94.9
<i>S. faecalis</i> ---	12.16±0.72-----	5.00	4	17.16	17.25±1.28	100.5	101.8
		10.00	4	22.16	21.06±1.68	95.0	89.0
		15.00	4	27.16	26.20±2.64	96.5	93.6

* Standard error of the mean.

Reproducibility of Assays

In addition to variations within replicates made at one time, additional variation is encountered when the assay is repeated on portions withdrawn from the same sample at different times. The net amount of this variation was indicated by the results of analyses on two standard food samples used for control. The data from the assays of these standard samples may be considered a measure of the over-all variability due to differences in sampling, extraction, laboratory techniques, the uncontrolled differences in composition of media, and other factors not easily controlled in this type of assay.

Data given in table 4 show that equivalent mean values were obtained by both *L. casei* or *S. faecalis* procedures for the folic acid content of a standard dried spinach sample and of a yeast residuals sample. However, the coefficients of variation differed with the test organism used. For spinach and yeast residuals, the coefficients were, respectively, 10.53 and 8.00 for the *L. casei* procedure, and 6.85 and 12.00 for the *S. faecalis* procedure.

Recovery of Added Folic Acid

Recoveries of folic acid from samples to which known amounts were added were determined to show the reproducibility of the assay procedures. Standard folic acid was added directly to 1-gm. dry spinach samples before extraction so that the recovery figure should be representative of the effect of the uncontrolled variables for the entire procedure. The results (table 5) showed very good recoveries with both organisms but a greater variation with the *S. faecalis* procedure. The average recovery in terms of total folic acid with *L. casei* was 96.9 percent, range 96.8–97.0; with *S. faecalis*, 97.3 percent, range 95.0–100.5. The average recovery in terms of added folic acid was 92.9 per-

cent with *L. casei*, range 90.2–94.9; with *S. faecalis*, 94.8 percent, range 89.0–101.8.

Potential Enzyme Activity of Chicken Pancreas

In an experiment to determine the relative potency of the chicken pancreas enzyme, varying amounts of the enzyme preparation were added to 1-gm. samples of dried spinach, for the usual extraction procedure. The extracts were assayed by both the *L. casei* and *S. faecalis* methods. The results (table 6) showed that 20 mg. of the enzyme preparation were approximately four times the amount required under the conditions imposed by the standardized extraction procedure. In terms of relative potency, 1 mg. of the enzyme preparation was required to liberate 4.7 $\mu\text{ g.}$ of bound folic acid in dried spinach. Up to 320 mg. of the chicken pancreas enzyme preparation have been used with 1-gm. dried spinach samples without increasing the amount of folic acid liberated by 5 mg.

TABLE 6.—*Folic acid liberated by varying amounts of chicken pancreas enzyme from 1-gm. samples of dried spinach*

Enzyme	Folic acid			
	<i>L. casei</i>		<i>S. faecalis</i>	
	Found	Liberated	Found	Liberated
<i>mg.</i>	$\mu\text{ g.}$	$\mu\text{ g.}$	$\mu\text{ g.}$	$\mu\text{ g.}$
0-----	4.10	0	3.75	0
0.005-----	4.10	0	4.25	.50
0.025-----	4.10	0	4.50	.75
0.05-----	4.10	0	4.75	1.00
0.25-----	5.55	1.45	5.45	1.70
0.50-----	6.45	2.35	6.50	2.75
1.0-----	8.80	4.70	8.45	4.70
5.0-----	10.50	6.40	10.10	6.35
20.0-----	10.50	6.40	9.95	6.20
100.0-----	10.50	6.40	10.25	6.50

Completeness of Extraction

Takadiastase, hog kidney, and chicken pancreas enzymes have been used in a study on the extraction of folic acid from food samples. Papain had been reported to be of lesser value for the release of folic acid from tissues (24). Extraction studies on selected foods such as milk, eggs, spinach, turnip greens, and whole wheat confirmed that observation. Takadiastase was a commercial preparation used at a standard or customary level of 20 mg. to 1 gm. of dry-weight sample in acetate buffer at pH 4.5 and incubated at 37° C. for 24 hours. Hog kidney enzyme was prepared by the procedure given by Bird and others (13). Five milliliters of the hog kidney preparation, equivalent to 1.25 gm. of fresh hog kidney, was kept in test tubes stored at -18° C. An amount equivalent to 1.25 gm. of fresh hog kidney was used per gm. of dry-weight sample in acetate buffer at pH 4.5 and incubated at 45° C. for 16 hours. The previously described chicken pancreas enzyme preparation was used at 20 mg. per gm. of dry-weight sample in phosphate buffer at pH 7.2 and incubated at 37° C. for 24 hours.

The techniques of the extraction were those previously described, and the extracts were assayed using the *S. faecalis* procedure. Blanks were run to account for folic acid or the equivalent in the enzyme preparations and reagents. The results of the assays on a number of different food samples (table 7) showed that the chicken pancreas enzyme was very effective. The takadiastase preparation, under the conditions and amounts employed, was of little value for increasing the amount of folic acid over that found in the free form. The hog kidney preparation did increase the amount of folic acid, but in most cases the

TABLE 7.—Effectiveness of different enzymes in releasing folic acid from food samples

Sample	Folic acid content			
	No enzyme	Takadiastase	Hog kidney	Chicken pancreas
	μ g./gm.	μ g./gm.	μ g./gm.	μ g./gm.
Asparagus	0.16	0.17	0.25	0.25
Brewer's yeast	1.59	-----	15.5	20.9
Egg yolk, dried	.38	-----	.28	.58
Mustard greens, dried	1.28	-----	4.93	10.47
Onions, spring	.090	.110	.090	.249
Radishes	.054	.074	.085	.164
Rhubarb	.019	.022	.050	.091
Soy flour	1.18	-----	1.65	3.86
Strawberries	.038	.047	.088	.085

increase was considerably less than that of the chicken pancreas preparation.

In subsequent tests, it was found that approximately eight times the amount of hog kidney preparation (equivalent to 10 gm. of fresh hog kidney) was required to liberate the bound folic acid in 1 gm. of soy flour to the same extent as was liberated by 20 mg. of chicken pancreas preparation. Another hog kidney preparation prepared in the same way confirmed this finding.

In order to test the effectiveness of the extraction procedure, 1-gm. dried spinach samples were treated with buffer solutions varying in pH; autoclaved and not autoclaved; and filtered and not filtered at pH 7.0. It was thought that these unfiltered or suspended samples would show, during the 72-hour incubation period used for the lactic acid production of the growth organisms, whether more folic acid could be removed or whether there would be appreciable interference when the filtrates were not clear. For pH 5.0, acetate buffer (pH 4.5) was mixed with phosphoric acid and the pH brought to 5.0 with NaOH; for pH 7.0 the M/5 phosphate buffer was adjusted to pH 7.0 with phosphoric acid; for pH 9.0, 11.0, and 13.0, N/100,000, N/1000, and N/10 NaOH solutions were used.

The standardized procedure for the preparation of extracts was followed except that samples were rinsed from the blender with appropriate buffer solution rather than with distilled water, and autoclaving for 15 minutes at 15 pounds steam pressure was omitted for samples specified not to be heated during the extraction. Chicken pancreas enzyme was added to samples after cooling, if total folic acid was to be determined. Samples were incubated 24 hours at 37° C. with or without the enzyme, both at the pH of the extracting solutions and after adjustment of the pH to 7.0, using sodium hydroxide or phosphoric acid as required. The amounts of phosphate were accounted for so that there should be slight deviation from the amounts used in the standard procedure.

Samples were autoclaved briefly following incubation with the enzyme. The pH was adjusted to 7.0, if necessary, and the mixture was made to volume in the regular way and filtered, except those samples designated to be suspended. Dilutions were made for the proper level of expected folic acid concentration and assays were made with procedures for either organism or both, according to the convenience of the laboratory schedule.

TABLE 8.—Mean free and total folic acid in 1-gm. samples of dried spinach subjected to different extracting conditions

Treatment			Number of samples	Folic acid	
pH	Auto-claved	Assay material		Free	Total
5.0	15	Clear filtrate	4	8.7	
5.0	0	-----do-----	7	10.9	11.5
7.0	15	-----do-----	5	4.6	11.6
7.0	15	Suspended sample	14	6.2	10.8
7.0	0	Clear filtrate	2	9.0	10.3
7.0	0	Suspended sample	8	6.4	11.5
9.0	15	Clear filtrate	6	7.4	11.1
9.0	0	-----do-----	1	9.8	9.6
11.0	15	-----do-----	4	8.6	9.8
11.0	0	-----do-----	1	9.6	11.0
13.0	15	-----do-----	4	3.6	9.3
13.0	0	-----do-----	4	3.7	11.2
			4		13.0

The results of this experiment showed (table 8) the effect of pH on the extraction of folic acid. Although not all of the folic acid was available in the free form after extraction at different pH levels, more was extracted at pH 5 and pH 11 than at pH 7. Folic acid was not destroyed, since parallel samples to which enzyme had been added yielded the full expected amount. In the samples that had not been heated or autoclaved prior to incubation, naturally occurring enzymes in the spinach were present to aid the extraction. These naturally occurring enzymes apparently were inhibited at pH 13.0. At pH 7.0, suspended samples did not yield an increased amount of total folic acid even though there was a slight increase in the amount of free folic acid. None of the treatments had improved the extraction of spinach samples over the standardized extraction procedure.

Results of Laboratory Analysis of Foods

The standardized microbiological assay procedures for folic acid (p. 3) were applied in the analysis of a number of foods and similar materials, and the results are summarized in table 9. To increase the usefulness of the table, folic acid contents are expressed in milligrams of folic acid

per 100 gm. of fresh weight, dry weight, and, in some foods, dry-fat-free basis. Where analyses had been made on the aqueous extract from samples incubated with and without the enzyme, these data are listed under "total" and "free" folic acid. Data from the *L. casei* and *S. faecalis* procedures are given separately.

Among the 200 foods listed, representing 348 food items, 53 were from both the Washington, D. C. area and the Texas area. Of these 53 foods, 30 in both areas were of the same range of values; 10 were higher and 13 were lower in the Texas samples than in the Washington, D. C., samples, taking into account the range of the individual foods. With the possible exception of meats, no characteristic order was found in differences in the folic acid content of food items in the two localities. In food groups such as leafy greens, green vegetables, legumes, root vegetables and fruits, some items were higher in folic acid content in one locality than in the other.

A comparison of values obtained from the use of the *L. casei* and *S. faecalis* procedures showed a general agreement for most foods. Many differences, which at times appear large between average values, cannot be considered true differences when the range of subsamples is considered. Real differences appeared, however, in the assays of rhubarb, dried figs, tangerines, mature onions, pecans, smoked ham, oats, and six of the breakfast cereals. With the exception of breakfast cereals, the results using *L. casei* were equally distributed as higher and lower than the results using *S. faecalis*. In cereals for which real differences occurred, all of the *L. casei* values were lower than the *S. faecalis* values.

In examining these differences, it should be noted that the measure of folic acid depended upon a growth response. Because *L. casei* responds to conjugates as well as to the monoglutamic acid compound, a higher *L. casei* value could be due to incomplete enzymatic conversion of conjugates. Because certain strains of *S. faecalis* respond to pteric acid (folic acid without glutamic acid) and formylptericoic acid, neither active for *L. casei* or for animals, higher *S. faecalis* values could be due to these compounds. In this case, it might be thought that a correction could be made for their presence by using the "free" folic acid values. However, such a correction was found to be unsatisfactory. Other substances yielding growth responses to micro-organisms and not accounted for in the assay medium could yield divergent results. Unless growth-response activities of such sub-

stances were similar to those of folic acid, their presence would have been detected at the time of assay by progressive differences at the various dilution levels employed in the assay. Since *L. casei* is more sensitive to folic acid and is assayed in solutions approximately five times more dilute, it is probable that the *L. casei* values are more nearly those of biological significance than those of *S. faecalis*.

Among the foods with 1.0 mg. or more of folic acid per 100 gm. of food, dry weight, were brewer's yeast, liver concentrate, chicken liver, asparagus, broadleaf endive, calabrese broccoli, leaf lettuce, and spinach. Foods containing 0.4 to 1.0 mg. of

folic acid per 100 gm., dry weight, included most of the other leafy greens, liver, blackeye peas, dried beans, and soy flour. A few fruits and other vegetables except root vegetables made up most of the 35 foods in the group containing 0.1 to 0.4 mg. of folic acid per 100 gm., dry weight. The foods with 0.03 to 0.1 mg. of folic acid per 100 gm., dry weight, consisted mainly of root vegetables, most fresh fruits, the grains and grain products, nuts, and lean beef. The foods with 0.03 mg. or less folic acid per 100 gm., dry weight, included eggs, milk, meats (other than beef), and poultry.

TABLE 9.—Total and free folic acid in edible portions of foods, determined by microbiological assay with *L. casei* and *S. faecalis*

Food	Source	Moisture (percent)	Fat (percent)	Total folic acid content (mg./100 gm.)				
				<i>L. casei</i>				
				Fresh weight basis			Dry weight, average	Dry weight fat-free
				Number of sub- samples	Range	Average		
MEATS, EGGS								
Beef:								
Ground round	Washington, D. C., market	62.6	15.0	3	0.0052-0.0080	0.0064	0.017	0.029
Round steak	do	70.5	16.0	2	.0065- .0068	.0066	.022	.049
	do	70.1	16.9	8	.0054- .0056	.0055	.018	.042
	Texas	74.8	3.9	4	.0115- .0180	.0142	.056	.067
	do	70.0	9.3	4	.0153- .0181	.0167	.056	.081
Chuck	do	74.9	4.9	1		.0149	.059	.074
	do	71.7	8.0	2	.0144- .0166	.0155	.055	.076
Hamburg	Washington, D. C., market	62.5	19.4	3	.0043- .0054	.0049	.013	.027
Heart	Texas	75.5		4	.0018- .0042	.0031	.013	
Kidney	do	75.8		2	.0584- .0584	.0584	.241	
Liver	do	68.1		3	.2766- .3091	.2941	.922	
Sweetbreads	do	78.2		2	.0219- .0236	.0228	.105	
Lamb:								
Stew meat, ground	Washington, D. C., market	59.3	17.9	14	.0003- .0064	.0025	.006	.011
Leg	Texas	73.0		2	.0032- .0034	.0033	.012	
Liver	do	69.5		2	.2730- .2790	.2760	.905	
Rolled shoulder	do	68.6		2	.0074- .0090	.0082	.026	
Pork:								
Liver	do	68.0		2	.2090- .2330	.2210	.691	
Loin	Washington, D. C., market	66.4	12.6	2	.0032- .0032	.0032	.010	.015
Ham, smoked	do	67.7	6.9	2	.0082- .0129	.0106	.033	.042
Sausage	do	33.6	55.3	7	.0108- .0194	.0138	.021	.124
Poultry:								
Chicken, dark	Texas market	77.5		2	.0022- .0034	.0028	.013	
Chicken, white	do	77.4		3	.0026- .0035	.0031	.014	
Chicken liver	do	72.1		2	.3770- .3770	.3770	1.351	
Turkey, crosscut steaks	Virginia	65.3		3	.0032- .0035	.0034	.010	
	do	61.3		3	.0100- .0105	.0101	.026	
Turkey, steaks, light meat	do	71.5		2	.0044- .0044	.0044	.015	
Turkey	Texas market	74.4		2	.0101- .0105	.0103	.040	
Veal:								
Stew meat, ground	Washington, D. C., market	71.6	7.8	3	.0031- .0064	.0043	.015	.021
Eggs:								
Whole	Agricultural Research Center	74.4		6	.0019- .0059	.0032	.013	
	Texas market	73.5		3	.0065- .0081	.0075	.028	
White	Agricultural Research Center	87.4		7	.0002- .0007	.0004	.003	
Yolk	do	50.8		5	.0100- .0165	.0131	.027	
	Special sample	dried		2			.062	
NUTS								
Almonds	Washington, D. C., market	3.9	52.4	9	.0275- .0680	.0447	.047	.103
Brazil Nuts	do	4.7	62.8	4	.0035- .0046	.0040	.004	.012
Coconuts	Texas market	43.8		5	.0138- .0423	.0276	.045	
Filberts	Washington, D. C., market	3.7	63.0	6	.0550- .0680	.0621	.064	.186
Peanuts	do	1.0	49.6	12	.0440- .0650	.0511	.052	.103
Pecans	do	2.4	69.9	5	.0178- .0205	.0195	.020	.070
Walnuts	do	3.3	64.7	5	.0725- .0800	.0761	.079	.238
VEGETABLES, FRESH								
Asparagus	do	93.3						
	Texas A. and M. College farm	90.3		4	.0740- .1100	.0893	1.333	
Beans:				2	.1384- .1466	.1425	1.469	
Lima	Washington, D. C., market	76.8		2	.0420- .0512	.0466	.201	
Lima, bush	Texas A. and M. College farm	62.5		4	.0178- .0371	.0279	.074	
	do	72.4		2	.0112- .0154	.0133	.048	
	do	57.2		5	.0185- .0279	.0227	.053	
	do	66.7		3	.0237- .0535	.0406	.122	
	do	67.1		3	.0097- .0112	.0103	.031	
	do	59.8		4	.0302- .0361	.0324	.081	
Lima, pole	do	59.3		4	.0301- .0620	.0439	.108	
	do	60.3		4	.0235- .0340	.0264	.066	

TABLE 9.—Total and free folic acid in edible portions of foods, determined by microbiological assay with *L. casei* and *S. faecalis*—Continued

Food	Total folic acid content (mg./100 gm.)					Free folic acid content (mg./100 gm.)					
	<i>S. faecalis</i>					<i>L. casei</i>			<i>S. faecalis</i>		
	Fresh weight basis			Dry weight average	Dry weight fat-free	Fresh weight basis			Fresh weight basis		
	Number of sub-samples	Range	Average			Number of sub-samples	Range	Average	Number of sub-samples	Range	Average
MEATS, EGGS											
Beef:											
Ground round	3	0.0066-0.0079	0.0074	0.020	0.033	2	0.0033-0.0055	0.0044	2	0.0038-0.0049	0.0043
Round steak	2	.0092- .0092	.0092	.031	.068	2	.0063- .0070	.0066	2	.0083- .0083	.0083
	8	.0087- .0108	.0096	.032	.074	3	.0050- .0052	.0051	3	.0073- .0080	.0077
Chuck											
Hamburg	3	.0042- .0062	.0051	.014	.028	2	.0036- .0039	.0038	2	.0033- .0035	.0034
Heart											
Kidney											
Liver											
Sweetbreads											
Lamb:											
Stew meat, ground	14	.0003- .0022	.0013	.003	.006	4	.0004- .0005	.0005	4	.0002- .0005	.0004
Leg											
Liver											
Rolled shoulder											
Pork:											
Liver											
Loin	3	.0015- .0018	.0016	.005	.008	1		.0002	1		.0003
Ham, smoked	2	.0040- .0061	.0051	.016	.020	2	.0002- .0003	.0003	2	.0003- .0004	.0004
Sausage	9	.0057- .0136	.0093	.014	.084	2	.0005- .0006	.0006	4	.0002- .0005	.0004
Poultry:											
Chicken, dark											
Chicken, white											
Chicken liver											
Turkey, crosscut steaks	2	.0045- .0047	.0046	.013		1		.0035	1		.0039
	3	.0141- .0149	.0143	.037		2	.0070- .0095	.0083	2	.0121- .0125	.0123
Turkey, steaks, light meat	2	.0059- .0059	.0059	.021		1		.0039	1		.0052
Turkey											
Veal:											
Stew meat, ground	3	.0041- .0069	.0050	.018	.024	2	.0029- .0036	.0033	2	.0017- .0032	.0025
Eggs:											
Whole	6	.0041- .0050	.0046	.018							
White	7	.0006- .0007	.0007	.006							
Yolk	7	.0090- .0148	.0127	.026							
	2			.048							
NUTS											
Almonds	10	.0360- .0584	.0454	.047	.104						
Brazil Nuts	4	.0038- .0053	.0049	.005	.015						
Coconuts											
Filberts	7	.0555- .0887	.0711	.074	.214						
Peanuts	13	.0480- .0755	.0620	.063	.126						
Pecans	5	.0240- .0430	.0344	.035	.124						
Walnuts	5	.0693- .0883	.0782	.081	.244						
VEGETABLES, FRESH											
Asparagus	4	.0584- .1150	.0857	1.279		2	.0575- .0640	.0608	2	.0568- .0600	.0584
Beans:											
Lima	2	.0283- .0405	.0344	.148		1		.0047	1		.0066
Lima, bush											
Lima, pole											

TABLE 9.—Total and free folic acid in edible portions of foods, determined by microbiological assay with *L. casei* and *S. faecalis*—Continued

Food	Source	Moisture (percent)	Fat (percent)	Total folic acid content (mg./100 gm.)				
				<i>L. casei</i>				
				Fresh weight basis			Dry weight, average	Dry weight fat-free
				Number of sub-samples	Range	Average		
VEGETABLES, FRESH—CON.								
Beans—Continued								
Lima, pole—Continued								
	Texas A. and M. College farm	59.0		4	.0412–.0742	.0562	.137	
	do	64.0		2	.0185–.0199	.0192	.053	
	Washington, D. C., market	90.8		3	.0168–.0280	.0228	.248	
	do	91.9		4	.0139–.0212	.0179	.221	
	do	90.1		4	.0154–.0203	.0172	.174	
	Texas market	91.8		3	.0288–.0337	.0312	.380	
	do	92.2		2	.0115–.0156	.0136	.174	
	do	91.8		2	.0378–.0433	.0406	.495	
	Texas A. and M. College farm	90.6		2	.0169–.0213	.0191	.203	
	do	86.6		2	.0259–.0280	.0270	.201	
	do	88.5		2	.0128–.0176	.0152	.132	
	Texas market	91.4		2	.0328–.0385	.0357	.415	
	do	92.4		2	.0172–.0224	.0198	.260	
	Texas A. and M. College farm	89.8		2	.0353–.0396	.0375	.368	
	do	91.2		2	.0380–.0399	.0390	.443	
	do	86.0		2	.0308–.0308	.0308	.220	
	Washington, D. C., market	85.4		3	.0126–.0183	.0150	.103	
	Texas market	88.3		2	.0093–.0119	.0106	.091	
	do	85.5		2	.0104–.0109	.0106	.073	
	Washington, D. C., market	90.0		7	.0200–.0500	.0352	.352	
	Texas market	90.8		2	.0210–.0262	.0236	.257	
	do	90.5		2	.0230–.0260	.0245	.258	
	Texas A. and M. College farm	85.5		2	.1420–.1600	.1510	1.041	
	Washington, D. C., market	85.0		7	.0138–.0300	.0189	.126	
	Texas market	84.1		2	.0315–.0360	.0338	.212	
	do	84.5		4	.0283–.0330	.0310	.200	
Cabbage:								
Chinese								
	Washington, D. C., market	94.4		2	.0114–.0114	.0114	.204	
	Texas market	92.5		3	.0189–.0223	.0206	.275	
	do	89.6		2	.0143–.0199	.0171	.164	
Red								
	Washington, D. C., market	92.1		3	.0054–.0069	.0064	.081	
Summer								
	Texas market	93.1		2	.0188–.0192	.0190	.275	
	do	91.5		2	.0344–.0507	.0426	.501	
	do	92.6		2	.0186–.0188	.0187	.253	
	Texas A. and M. College farm	91.4		2	.0614–.0878	.0746	.867	
	Washington, D. C., market	86.9		2	.0076–.0076	.0076	.058	
	do	86.7		4	.0046–.0060	.0054	.041	
	do	88.4		4	.0064–.0074	.0069	.060	
	Texas market	89.9		2	.0130–.0182	.0156	.154	
	do	88.2		2	.0051–.0073	.0062	.053	
	do	86.8		2	.0085–.0117	.0101	.077	
	Washington, D. C., market	91.6		2	.0145–.0200	.0172	.205	
	Texas market	91.0		2	.0247–.0335	.0291	.323	
	do	90.8		2	.0293–.0305	.0299	.325	
Cauliflower								
	Washington, D. C., market	95.1		2	.0079–.0092	.0085	.173	
	Texas market	94.6		2	.0043–.0061	.0052	.096	
	do	95.5		2	.0059–.0088	.0074	.164	
Celery								
	Washington, D. C., market	95.1		2	.0079–.0092	.0085	.173	
	Texas market	94.6		2	.0043–.0061	.0052	.096	
	do	95.5		2	.0059–.0088	.0074	.164	
Corn:								
Field, edible								
	do	77.0		4	.0188–.0270	.0234	.102	
Sweet								
	Washington, D. C., market	77.1		2	.0093–.0093	.0093	.041	
	Texas A. and M. College farm	75.5		2	.0131–.0135	.0133	.054	
	Texas market	73.9		3	.0653–.0775	.0699	.268	
	Texas A. and M. College farm	81.3		2	.0652–.0690	.0671	.359	
	Texas market	78.9		2	.0074–.0092	.0083	.039	
	Texas A. and M. College farm	64.0		2	.0167–.0219	.0193	.054	
	do	78.6		2	.0266–.0301	.0284	.133	
	do	77.9		2	.0129–.0132	.0131	.059	
	do	83.6		3	.0153–.0325	.0243	.148	
Cucumbers								
	Washington, D. C., market	95.8		2	.0085–.0088	.0087	.207	
	Texas market	95.8		2	.0076–.0081	.0079	.188	
	do	96.4		2	.0029–.0040	.0035	.097	

TABLE 9.—Total and free folic acid in edible portions of foods, determined by microbiological assay with *L. casei* and *S. faecalis*—Continued

Food	Total folic acid content (mg./100 gm.)					Free folic acid content (mg./100 gm.)						
	<i>S. faecalis</i>					<i>L. casei</i>			<i>S. faecalis</i>			
	Fresh weight basis			Dry weight average	Dry weight fat-free	Fresh weight basis			Fresh weight basis			
	Number of sub-samples	Range	Average			Number of sub-samples	Range	Average	Number of sub-samples	Range	Average	
VEGETABLES, FRESH—CON.												
Beans—Continued												
Lima, pole—Continued												
Snap, green	2	.0168- .0211	.0190	.207	2	.0046- .0185	.0116	1		.0107		
	3	.0220- .0246	.0232	.286	4	.0084- .0093	.0090	4	.0105- .0117	.0111		
	3	.0181- .0191	.0187	.189	4	.0105- .0122	.0114	4	.0104- .0126	.0112		
Wax												
Beets	2	.0169- .0184	.0177	.121	2	.0014- .0045	.0030	2	.0021- .0050	.0036		
Broccoli	7	.0268- .0415	.0333	.333	2	.0120- .0160	.0140	2	.0075- .0085	.0080		
Brussels sprouts	7	.0163- .0372	.0248	.165	3	.0074- .0130	.0109	3	.0089- .0178	.0124		
Cabbage:												
Chinese	2	.0116- .0124	.0120	.214	1		.0043	1		.0058		
Red												
Summer	3	.0057- .0095	.0079	.100	2	.0026- .0030	.0028	2	.0028- .0040	.0034		
Carrots	3	.0064- .0089	.0072	.055	2	.0020- .0021	.0020	2	.0013- .0017	.0015		
	4	.0056- .0063	.0059	.044	4	.0033- .0034	.0034	4	.0032- .0034	.0033		
	4	.0062- .0073	.0068	.059	3	.0039- .0041	.0040	3	.0042- .0049	.0044		
Cauliflower	2	.0103- .0152	.0128	.152	1		.0100	1		.0070		
Celery	2	.0069- .0087	.0078	.159	1		.0027	1		.0024		
Corn:												
Field, edible												
Sweet	3	.0124- .0144	.0135	.059	2	.0047- .0054	.0051	2	.0038- .0063	.0051		
Cucumbers	2	.0073- .0079	.0076	.181	3	.0026- .0044	.0037	3	.0028- .0046	.0039		

TABLE 9.—Total and free folic acid in edible portions of foods, determined by microbiological assay with *L. casei* and *S. faecalis*—Continued

Food	Source	Moisture (percent)	Fat (percent)	Total folic acid content (mg./100 gm.)				
				<i>L. casei</i>				
				Fresh weight basis			Dry weight, average	Dry weight fat-free
				Number of sub-samples	Range	Average		
VEGETABLES, FRESH—CON.								
Eggplant	Washington, D. C., market	92.1		4	.0111–.0204	.0146	.185	
	Texas market	92.9		3	.0040–.0053	.0048	.068	
	do	92.7		2	.0074–.0084	.0079	.108	
Greens:								
Beet	Washington, D. C., market	89.8		2	.0315–.0315	.0315	.309	
	Texas market	91.4		2	.0381–.0396	.0389	.452	
Beet, immature	Maryland farm	94.3		4	.0263–.0338	.0304	.533	
	Texas market	94.2		2	.0170–.0222	.0196	.338	
Broccoli leaves	do	89.2		2	.0780–.1035	.0908	.841	
	do	95.0		3	.0236–.0304	.0280	.560	
Chicory	Washington, D. C., market	95.0						
Collard	Texas A. and M. College farm	89.4		3	.0858–.1133	.1018	.960	
	Texas market	94.9		2	.0619–.0654	.0637	1.249	
Endive	do	93.6		2	.0247–.0288	.0268	.419	
	Texas A. and M. College farm	92.6		2	.0478–.0512	.0495	.669	
Escarole	Texas market	94.8		2	.0233–.0283	.0258	.496	
Kale	Washington, D. C., market	88.5		2	.0540–.0650	.0595	.517	
	Texas market	91.8		2	.0354–.0399	.0377	.460	
Mustard	do	92.5		2	.0140–.0197	.0169	.225	
	Special sample	dried		2			.800	
do	do	dried		2			.880	
	Texas market	90.5		3	.0365–.0540	.0429	.452	
Parsley	do	91.7		2	.0264–.0324	.0294	.354	
	do	89.6		2	.0426–.0432	.0429	.413	
Spinach	Washington, D. C., market	93.3		3	.0938–.1120	.1053	1.572	
	do	93.8		2	.0574–.0574	.0574	.926	
	do	91.9		4	.0458–.0533	.0486	.600	
	Texas market	93.1		2	.0786–.0845	.0815	1.181	
	do	91.6		2	.1120–.1170	.1145	1.363	
do	do	92.9		2	.0498–.0546	.0522	.735	
	do	93.5		4	.0776–.0917	.0867	1.334	
Spinach, New Zealand	Washington, D. C., market	95.0		3	.0264–.0350	.0318	.636	
	Texas A. and M. College farm	92.9		3	.0606–.0691	.0639	.900	
Swiss chard	do	89.7		2	.0417–.0426	.0422	.410	
	Washington, D. C., market	92.5		4	.0534–.0826	.0695	.927	
Turnip	Special sample	dried		2			.667	
	Texas A. and M. College farm	92.1		2	.0828–.0905	.0867	1.097	
do	do	89.2		2	.0939–.0956	.0948	.878	
Turnip, immature	Maryland farm	94.5		2	.0255–.0255	.0255	.464	
Water cress	Texas market	94.7		2	.0433–.0519	.0476	.898	
Kohlrabi	Texas market	80.5		2	.0083–.0119	.0101	.052	
Lettuce:								
Boston	Washington, D. C., market	96.2		3	.0100–.0129	.0112	.295	
Boston, immature	do	94.8		2	.0390–.0390	.0390	.750	
Iceberg	do	95.7		5	.0085–.0135	.0103	.240	
	Texas market	96.0		2	.0025–.0053	.0039	.098	
do	do	95.7		2	.0023–.0032	.0028	.065	
do	do	95.8		4	.0103–.0115	.0108	.257	
Leaf	do	93.5		3	.0521–.0556	.0543	.835	
	do	96.2		2	.0151–.0179	.0165	.434	
do	do	94.4		2	.0521–.0647	.0584	1.043	
do	Texas A. and M. College farm	92.3		2	.0436–.0464	.0450	.584	
Mushrooms	Washington, D. C., market	91.7		4	.0232–.0310	.0276	.333	
	Texas market	91.8		4	.0134–.0155	.0141	.172	
Okra	do	89.8		4	.0245–.0307	.0289	.283	
	Texas A. and M. College farm	91.6		3	.0117–.0276	.0192	.229	
Onions:								
Green, with tops	Texas market	91.7		2	.0113–.0138	.0126	.152	
Green, without tops	Washington, D. C., market	90.5		5	.0078–.0200	.0140	.147	
Green, tops	do	94.5		5	.0136–.0200	.0154	.280	
Mature	do	89.0		6	.0093–.0155	.0120	.109	
	Texas market	92.4		2	.0053–.0067	.0060	.079	
do	do	92.6		2	.0108–.0173	.0141	.191	
Parsnips	Washington, D. C., market	78.0		2	.0367–.0367	.0367	.167	
	Texas market	80.1		2	.0083–.0087	.0085	.043	

TABLE 9.—Total and free folic acid in edible portions of foods, determined by microbiological assay with *L. casei* and *S. faecalis*—Continued

Food	Total folic acid content (mg./100 gm.)					Free folic acid content (mg./100 gm.)						
	<i>S. faecalis</i>					<i>L. casei</i>			<i>S. faecalis</i>			
	Fresh weight basis			Dry weight average	Dry weight fat-free	Fresh weight basis			Fresh weight basis			
	Number of sub-samples	Range	Average			Number of sub-samples	Range	Average	Number of sub-samples	Range	Average	
VEGETABLES, FRESH—CON.												
Eggplant.....	5	.0086- .0267	.0147	.186	2	.0011- .0074	.0043	2	.0010- .0056	.0033		
Greens:												
Beet.....	2	.0500- .0514	.0507	.497	1		.0135	1		.0202		
Beet, immature.....	6	.0249- .0310	.0282	.495	2	.0225- .0290	.0258	2	.0175- .0261	.0218		
Broccoli leaves.....												
Chicory.....	3	.0271- .0354	.0316	.632	2	.0042- .0063	.0053	2	.0037- .0050	.0044		
Collard.....												
Endive.....												
Escarole.....												
Kale.....	2	.0390- .0453	.0422	.367	1		.0443	1		.0177		
Mustard.....												
	2			1.050								
	2			.874								
Parsley.....												
Spinach.....	3	.0928- .0959	.0943	1.407	1		.1100	1		.1010		
	2	.0654- .0654	.0654	1.055	2	.0300- .0320	.0310	2	.0360- .0360	.0360		
	4	.0438- .0557	.0482	.595	4	.0261- .0432	.0330	4	.0257- .0424	.0344		
Spinach, New Zealand.....												
Swiss chard.....	3	.0290- .0313	.0300	.600	1		.0048	1		.0049		
Turnip.....	4	.0440- .0845	.0636	.848	2	.0430- .0447	.0439	2	.0336- .0350	.0343		
	2			.645								
Turnip, immature.....	2	.0408- .0436	.0422	.767	1		.0102	1		.0094		
Water cress.....												
Kohlrabi.....												
Lettuce:												
Boston.....	3	.0108- .0109	.0109	.287	1		.0031	1		.0026		
Boston, immature.....	2	.0348- .0493	.0421	.810	1		.0126	1		.0044		
Iceberg.....	5	.0086- .0112	.0098	.228	2	.0036- .0045	.0041	2	.0021- .0025	.0023		
Leaf.....												
Mushrooms.....	5	.0272- .0330	.0304	.366	2	.0183- .0232	.0208	3	.0140- .0259	.0202		
Okra.....												
Onions:												
Green, with tops.....												
Green, without tops.....	5	.0088- .0110	.0098	.103	1		.0041	1		.0039		
Green, tops.....	5	.0098- .0223	.0136	.247								
Mature.....	6	.0061- .0081	.0070	.064								
Parsnips.....	3	.0247- .0269	.0257	.117	2	.0062- .0073	.0068	2	.0070- .0097	.0084		

TABLE 9.—Total and free folic acid in edible portions of foods, determined by microbiological assay with *L. casei* and *S. faecalis*—Continued

Food	Source	Moisture (percent)	Fat (percent)	Total folic acid content (mg./100 gm.)				
				<i>L. casei</i>				
				Fresh weight basis			Dry weight, average	Dry weight fat-free
				Number of sub-samples	Range	Average		
VEGETABLES, FRESH—CON.								
Peas	Washington, D. C., market	76.8		5	.0205–.0558	.0355	.153	
	do.	74.1		2	.0111–.0158	.0135	.052	
	do.	75.1		4	.0110–.0130	.0117	.047	
	do.	75.8		4	.0042–.0054	.0045	.019	
	Texas market	75.0		3	.0175–.0379	.0269	.108	
	do.	75.6		7	.0164–.0461	.0240	.098	
	do.	75.0		3	.0096–.0346	.0203	.081	
Peppers, green	Washington, D. C., market	94.1		2	.0098–.0098	.0098	.166	
	Texas market	93.9		2	.0057–.0064	.0061	.100	
	do.	93.5		6	.0026–.0044	.0037	.057	
Potatoes:								
Green Mountain:								
Peel	New York	78.3		2	.0207–.0207	.0207	.095	
Peeled	do.	82.0		3	.0047–.0120	.0081	.045	
Whole	New York (calculated)					.0114	.058	
Idaho	Texas market	75.6		2	.0023–.0024	.0024	.010	
Irish Cobbler:								
Peel	Maine	78.3		2	.0163–.0223	.0193	.089	
	North Carolina	79.1		6	.0110–.0195	.0138	.066	
Peeled	Maine	80.9		2	.0080–.0152	.0116	.061	
	North Carolina	79.3		6	.0035–.0042	.0037	.018	
Whole	Maine (calculated)					.0135	.068	
	North Carolina (calculated)					.0061	.029	
Sebago:								
Peel	Alabama	81.4		4	.0090–.0181	.0147	.079	
	South Carolina	80.1		7	.0071–.0180	.0115	.058	
Peeled	Alabama	80.1		5	.0042–.0084	.0061	.031	
	South Carolina	79.8		5	.0039–.0127	.0069	.034	
Whole	Alabama (calculated)					.0078	.041	
	South Carolina (calculated)					.0076	.038	
Triumph:								
Peel	Alabama	80.4		5	.0082–.0153	.0124	.063	
	South Carolina	80.4		6	.0053–.0156	.0109	.056	
Peeled	Alabama	81.7		5	.0024–.0115	.0065	.036	
	South Carolina	80.9		7	.0023–.0062	.0043	.023	
Whole	Alabama (calculated)					.0076	.041	
	South Carolina (calculated)					.0054	.028	
White Rose:								
Peel	California	83.6		3	.0078–.0173	.0122	.074	
Peeled	do.	81.4		2	.0065–.0065	.0065	.035	
Whole	California (calculated)					.0072	.041	
Pumpkin								
	Washington, D. C., market	93.0		3	.0092–.0113	.0104	.149	
	Texas market	92.3		3	.0046–.0058	.0051	.066	
Radishes								
	Washington, D. C., market	95.4		4	.0030–.0039	.0034	.074	
	Texas market	95.4		2	.0093–.0112	.0103	.224	
	do.	95.1		2	.0089–.0099	.0094	.192	
Rutabagas								
	Washington, D. C., market	88.5		5	.0048–.0100	.0069	.060	
	Texas market	86.7		2	.0027–.0032	.0030	.022	
Squash:								
Acorn								
	Washington, D. C., market	87.9		2	.0183–.0211	.0197	.163	
	Texas market	85.7		3	.0129–.0145	.0136	.095	
Caserta	Texas A. and M. College farm	94.5		2	.0099–.0120	.0110	.200	
Crookneck								
	Washington, D. C., market	92.9		2	.0094–.0098	.0096	.135	
	Texas market	92.8		3	.0065–.0078	.0073	.101	
	do.	92.6		4	.0108–.0189	.0159	.215	
Cushaw	do.	95.0		2	.0019–.0022	.0021	.042	
Danish	do.	92.3		2	.0040–.0045	.0043	.056	
	do.	93.0		4	.0123–.0163	.0143	.204	
Early prolific straight neck								
	Texas A. and M. College farm	93.4		2	.0152–.0178	.0165	.250	
Patty Pan								
	Texas market	94.6		3	.0176–.0195	.0186	.344	
	do.	93.7		2	.0087–.0093	.0090	.143	
	Texas A. and M. College farm	92.4		3	.0148–.0304	.0239	.314	
Zucchini	do.	95.0		2	.0099–.0116	.0108	.216	

TABLE 9.—Total and free folic acid in edible portions of foods, determined by microbiological assay with *L. casei* and *S. faecalis*—Continued

Food	Total folic acid content (mg./100 gm.)					Free folic acid content (mg./100 gm.)					
	<i>S. faecalis</i>					<i>L. casei</i>			<i>S. faecalis</i>		
	Fresh weight basis			Dry weight average	Dry weight fat-free	Fresh weight basis			Fresh weight basis		
	Number of sub-samples	Range	Average			Number of sub-samples	Range	Average	Number of sub-samples	Range	Average
VEGETABLES, FRESH—CON.											
Peas.....	6	.0188-.0445	.0301	.130	3	.0072-.0180	.0142	3	.0138-.0166	.0153	
	4	.0100-.0436	.0250	.097	2	.0063-.0074	.0069	3	.0053-.0121	.0098	
	4	.0118-.0123	.0122	.049	3	.0038-.0044	.0041	3	.0066-.0078	.0070	
	4	.0052-.0064	.0057	.024	2	.0029-.0029	.0029	2	.0032-.0038	.0036	
Peppers, green.....	3	.0096-.0124	.0112	.190	2	.0008-.0013	.0011	2	.0015-.0020	.0018	
Potatoes:											
Green Mountain:											
Peel.....	2	.0142-.0154	.0148	.068							
Peeled.....	3	.0061-.0069	.0066	.037							
Whole.....			.0088	.045							
Idaho:											
Irish Cobbler:											
Peel.....	3	.0192-.0212	.0201	.093							
Peeled.....	5	.0111-.0156	.0133	.064	3	.0065-.0080	.0073	2	.0061-.0076	.0069	
Whole.....	2	.0092-.0120	.0106	.056	5	.0034-.0050	.0044	3	.0022-.0027	.0025	
Whole.....			.0130	.065			.0065			.031	
Sebago:											
Peel.....	5	.0069-.0142	.0106	.057	3	.0035-.0091	.0068	3	.0031-.0064	.0052	
Peeled.....	6	.0103-.0161	.0142	.071	4	.0053-.0080	.0069	4	.0049-.0071	.0059	
Whole.....	5	.0035-.0055	.0044	.022	3	.0016-.0035	.0026	3	.0015-.0032	.0022	
Whole.....	5	.0035-.0069	.0053	.026	4	.0023-.0046	.0031	3	.0026-.0038	.0031	
Whole.....			.0056	.029			.0034			.028	
Whole.....			.0069	.034			.0037			.0036	
Triumph:											
Peel.....	5	.0080-.0133	.0098	.050	3	.0057-.0100	.0081	3	.0046-.0077	.0062	
Peeled.....	5	.0054-.0119	.0086	.044	3	.0042-.0116	.0087	3	.0049-.0098	.0072	
Whole.....	5	.0025-.0064	.0042	.023	3	.0016-.0034	.0025	4	.0012-.0033	.0020	
Whole.....	6	.0025-.0043	.0034	.018	3	.0019-.0043	.0028	4	.0013-.0034	.0022	
Whole.....			.0052	.028			.0036			.028	
Whole.....			.0043	.022			.0038			.0031	
White Rose:											
Peel.....	3	.0055-.0110	.0091	.056	2	.0051-.0054	.0053	2	.0049-.0055	.0052	
Peeled.....	4	.0051-.0112	.0074	.040	2	.0017-.0029	.0023	2	.0013-.0028	.0021	
Whole.....			.0073	.041			.0028			.0026	
Pumpkin.....	3	.0083-.0101	.0093	.133	2	.0040-.0043	.0042	2	.0037-.0063	.0050	
Radishes.....	4	.0031-.0040	.0036	.078	2	.0020-.0031	.0026	2	.0022-.0034	.0028	
Rutabagas.....	6	.0042-.0094	.0066	.057	2	.0034-.0035	.0035	3	.0030-.0031	.0031	
Squash:											
Acorn.....	2	.0194-.0229	.0212	.175	3	.0097-.0112	.0104	3	.0092-.0109	.0099	
Caserta.....											
Crookneck.....	2	.0135-.0135	.0135	.190	1		.0045	1		.0054	
Cushaw.....											
Danish.....											
Early prolific straight neck.....											
Patty Pan.....											
Zucchini.....											

TABLE 9.—Total and free folic acid in edible portions of foods, determined by microbiological assay with *L. casei* and *S. faecalis*—Continued

Food	Source	Moisture (percent)	Fat (percent)	Total folic acid content (mg./100 gm.)				
				<i>L. casei</i>				
				Fresh weight basis			Dry weight, average	Dry weight fat-free
				Number of sub- samples	Range	Average		
VEGETABLES, FRESH—CON.								
Sweetpotatoes	Texas market	69.9		3	.0141-.0257	.0191	.064	
	do.	70.0		2	.0049-.0057	.0053	.018	
Tomatoes	Washington, D. C., market	94.7		2	.0064-.0064	.0064	.121	
	Texas market	93.2		2	.0016-.0016	.0016	.023	
	Texas A. and M. College farm	93.4		3	.0029-.0042	.0034	.051	
	Texas market	92.8		4	.0112-.0184	.0155	.215	
	Texas A. and M. College farm	94.2		2	.0041-.0044	.0043	.074	
	do.	94.1		2	.0038-.0038	.0038	.064	
	Texas market	93.8		2	.0010-.0012	.0011	.018	
	Texas A. and M. College farm	92.2		2	.0026-.0031	.0029	.037	
	do.	93.4		2	.0053-.0057	.0055	.083	
	do.	93.9		6	.0011-.0021	.0017	.028	
	do.	93.6		4	.0025-.0029	.0028	.044	
	do.	93.4		2	.0045-.0080	.0063	.096	
	Texas market	93.2		4	.0091-.0134	.0113	.166	
	Texas A. and M. College farm	93.4		2	.0033-.0041	.0037	.056	
	do.	93.4		2	.0050-.0081	.0066	.100	
Turnips	Washington, D. C., market	91.2		3	.0035-.0042	.0039	.044	
VEGETABLES, DRIED								
Beans:								
Cowpeas	Composite of several brands	9.0		3	.3300-.4800	.3867	.425	
	do.	9.4		3	.1550-.1860	.1727	.191	
Kidney	do.	9.1		3	.1100-.1410	.1217	.134	
	Texas market	11.0		2	.0801-.0873	.0837	.094	
Navy	Composite of several brands	11.7		3	.0940-.1440	.1133	.128	
	Texas market	10.0		2	.1418-.1488	.1453	.161	
Pinto	Composite of several brands	8.2		3	.0960-.1000	.0973	.106	
	Texas market	9.4		2	.0662-.0773	.0718	.079	
Soybeans	1948 crop; composite U. S. sample	7.5		8	.1425-.2680	.1923	.208	
Lentils	Composite of several brands	8.7		5	.0550-.1400	.0990	.108	
Peas:								
Black-eyed, See Beans, cowpeas.								
Green split	do.	9.1		3	.0127-.0300	.0222	.024	
Yellow split	do.	7.9		5	.0165-.0265	.0216	.024	
FRUITS, FRESH								
Apples:								
Red Delicious:								
Peel	Washington, D. C., market	81.4		10	.0008-.0012	.0010	.005	
Peeled	do.	85.1		6	.0003-.0006	.0004	.003	
Whole	Washington, D. C. (calculated)					.0005	.003	
Winesap:								
Peel	Washington, D. C., market	81.7		10	.0007-.0011	.0010	.006	
Peeled	do.	85.1		6	.0002-.0007	.0005	.003	
	Texas market	84.2		4	.0006-.0012	.0008	.005	
Whole	Washington, D. C. (calculated)					.0006	.004	
	Texas market	83.0		4	.0008-.0014	.0012	.007	
Apricots	Washington, D. C., market	87.3		5	.0007-.0063	.0025	.020	
	Texas market	86.9		4	.0043-.0049	.0047	.036	
Avocados	Washington, D. C., market	67.6		3	.0530-.0610	.0567	.175	
	Texas market	67.4		2	.0048-.0067	.0058	.018	
Bananas	Washington, D. C., market	73.0		3	.0094-.0138	.0109	.040	
	Texas market	74.0		2	.0067-.0097	.0082	.032	
Berries:								
Blackberries:								
	Washington, D. C., market	83.6		3	.0136-.0228	.0188	.115	
	Texas A. and M. College farm	85.0		2	.0053-.0064	.0059	.039	
	do.	86.8		2	.0120-.0127	.0124	.094	
Blueberries	Washington, D. C., market	86.2		2	.0069-.0083	.0076	.055	
Cranberries	do.	86.8		2	.0015-.0018	.0017	.013	

TABLE 9.—Total and free folic acid in edible portions of foods, determined by microbiological assay with *L. casei* and *S. faecalis*—Continued

Food	Total folic acid content (mg./100 gm.)					Free folic acid content (mg./100 gm.)					
	<i>S. faecalis</i>					<i>L. casei</i>			<i>S. faecalis</i>		
	Fresh weight basis			Dry weight average	Dry weight fat-free	Fresh weight basis			Fresh weight basis		
	Number of sub-samples	Range	average			Number of sub-samples	Range	Average	Number of sub-samples	Range	Average
VEGETABLES, FRESH—CON.											
Sweetpotatoes.....											
Tomatoes.....	3	.0074-.0086	.0082	.155	2	.0039-.0041	.0040	2	.0039-.0049	.0044	
Turnips.....	2	.0045-.0049	.0047	.053				1		.0020	
VEGETABLES, DRIED											
Beans:											
Cowpeas.....	3	.3783-.6430	.4910	.540	2	.1590-.2100	.1845	2	.1197-.1237	.1217	
Kidney.....	4	.1742-.1953	.1880	.208	1		.1160	1		.1275	
Lima.....	3	.1224-.1424	.1347	.148	2	.0335-.0399	.0367	2	.0125-.0193	.0159	
Navy.....	4	.1275-.1474	.1363	.154	2	.0285-.0369	.0327	2	.0090-.0126	.0108	
Pinto.....	4	.0738-.1157	.0970	.106	2	.0124-.0210	.0167	1		.0072	
Soybeans.....	8	.1250-.3750	.2563	.277	4	.0449-.1160	.0873	4	.0685-.1308	.0959	
Lentils.....	5	.0852-.1123	.1010	.111	2	.0190-.0270	.0230	4	.0142-.0411	.0259	
Peas:											
Black-eyed, See Beans, cowpeas.											
Green split.....	4	.0115-.0285	.0201	.022	3	.0040-.0086	.0064	2	.0083-.0086	.0085	
Yellow split.....	5	.0259-.0383	.0304	.033	2	.0041-.0043	.0042	2	.0049-.0063	.0056	
FRUITS, FRESH											
Apples:											
Red Delicious:											
Peel.....	9	.0014-.0020	.0016	.009							
Peeled.....	5	.0005-.0009	.0007	.005							
Whole.....			.0009	.006							
Winesap:											
Peel.....	9	.0013-.0016	.0014	.008							
Peeled.....	5	.0005-.0011	.0007	.005							
Whole.....			.0008	.006							
Apricots.....	5	.0016-.0048	.0027	.021	2	.0001-.0008	.0005	1		.0003	
Avocados.....	3	.0430-.0446	.0440	.135	2	.0138-.0218	.0178	2	.0127-.0221	.0174	
Bananas.....	3	.0093-.0113	.0102	.038	2	.0059-.0067	.0063	2	.0046-.0073	.0060	
Berries:											
Blackberries:											
Blackberries.....	5	.0131-.0230	.0165	.101	3	.0098-.0173	.0129	3	.0137-.0192	.0160	
Blueberries.....	3	.0065-.0086	.0074	.054	2	.0021-.0027	.0024	2	.0028-.0032	.0030	
Cranberries.....	2	.0026-.0027	.0027	.021	1		.0001	1		.0010	

TABLE 9.—Total and free folic acid in edible portions of foods, determined by microbiological assay with *L. casei* and *S. faecalis*—Continued

Food	Source	Moisture (percent)	Fat (percent)	Total folic acid content (mg./100 gm.)				
				<i>L. casei</i>				
				Fresh weight basis			Dry weight, average	Dry weight fat-free
				Number of sub-samples	Range	Average		
FRUITS, FRESH—CONTINUED								
Berries—Continued								
Dewberries	Texas A. and M. College farm	85.2		2	.0308-.0308	.0308	.208	
	do	87.3		2	.0270-.0283	.0276	.224	
	Texas market	84.8		2	.0193-.0206	.0200	.132	
Red raspberries	Washington, D. C., market	86.4		3	.0041-.0056	.0051	.038	
Strawberries	do	91.9		4	.0034-.0056	.0046	.057	
	Texas A. and M. College farm	90.0		2	.0057-.0065	.0061	.061	
Cantaloups	Washington, D. C., market	90.4		2	.0072-.0096	.0084	.088	
	Texas A. and M. College farm	92.7		4	.0028-.0039	.0034	.047	
Cherries, Bing	Washington, D. C., market	79.6		2	.0061-.0073	.0067	.033	
	Texas market	81.3		3	.0044-.0069	.0052	.028	
Figs	do	83.0		4	.0049-.0088	.0067	.039	
Grapefruit	Washington, D. C., market	90.0		2	.0020-.0023	.0022	.022	
	Texas market	87.5		2	.0023-.0042	.0033	.026	
Grapes:								
Green	Washington, D. C., market	80.7		2	.0043-.0057	.0050	.026	
	Texas market	77.4		4	.0034-.0048	.0043	.019	
Red	Washington, D. C., market	81.3		3	.0046-.0061	.0054	.029	
	Texas market	80.8		2	.0026-.0030	.0028	.015	
Honeydew melon	Washington, D. C., market	90.8		3	.0042-.0058	.0049	.053	
Jujubes	Texas A. and M. College farm	72.9		4	.0058-.0099	.0083	.031	
Lemons	Washington, D. C., market	91.0		5	.0041-.0120	.0078	.087	
Limes	do	89.6		3	.0040-.0070	.0056	.054	
Nectarines	Texas market	84.6		3	.0129-.0271	.0201	.131	
Oranges	Washington, D. C., market	86.3		5	.0040-.0076	.0055	.040	
	Texas market	83.4		2	.0043-.0052	.0047	.028	
Orange juice	do	86.8		2	.0041-.0055	.0048	.036	
Peaches, yellow	Washington, D. C., market	88.6		3	.0021-.0025	.0023	.020	
	Texas market	84.5		4	.0010-.0019	.0013	.008	
Pears	Washington, D. C., market	85.5		2	.0021-.0025	.0023	.016	
	Texas market	83.7		4	.0013-.0023	.0018	.011	
Pineapple	Washington, D. C., market	86.3		3	.0040-.0093	.0059	.043	
	Texas market	91.2		4	.0005-.0012	.0008	.009	
Plums:								
Italian prune	do	80.6		2	.0026-.0027	.0027	.014	
Red	Washington, D. C., market	81.8		3	.0027-.0031	.0029	.016	
	Texas market	87.4		5	.0003-.0011	.0006	.005	
Yellow	Washington, D. C., market	88.1		4	.0007-.0011	.0010	.008	
Rhubarb	do	94.4		2	.0014-.0014	.0014	.025	
	Texas market	91.5		3	.0032-.0042	.0035	.041	
Tangerines	Washington, D. C., market	88.7		2	.0069-.0078	.0074	.066	
Watermelon	do	91.0		5	.0005-.0008	.0007	.008	
	Texas A. and M. College farm	90.7		3	.0002-.0004	.0003	.003	
	do	91.6		2	.0005-.0006	.0006	.007	
FRUITS, DRIED								
Apricots	Composite of several brands	27.1		2	.0044-.0049	.0047	.006	
Dates	Packaged	18.2		4	.0205-.0290	.0249	.030	
Figs	Composite of several brands	22.1		2	.0074-.0074	.0074	.010	
Mixed fruit	Fruit cake mixture	25.0		4	.0010-.0016	.0013	.002	
Peaches	Composite of several brands	24.9		2	.0040-.0065	.0053	.007	
Prunes	do	27.5		6	.0043-.0054	.0048	.007	
Raisins, seedless	do	17.2		3	.0090-.0135	.0106	.013	
CEREALS AND OTHER GRAIN PRODUCTS								
Breads:								
Cracked wheat	Washington, D. C., market	31.7		3	.0240-.0260	.0250	.037	
Dark wheat	do	32.2		4	.0235-.0300	.0271	.040	
Rye	do	35.1		2	.0155-.0159	.0157	.024	
Vienna	do	27.0		4	.0071-.0112	.0090	.012	
White	do	33.0		2	.0133-.0143	.0138	.021	

TABLE 9.—Total and free folic acid in edible portions of foods, determined by microbiological assay with *L. casei* and *S. faecalis*—Continued

Food	Total folic acid content (mg./100 gm.)					Free folic acid content (mg./100 gm.)					
	<i>S. faecalis</i>					<i>L. casei</i>			<i>S. faecalis</i>		
	Fresh weight basis			Dry weight average	Dry weight fat-free	Fresh weight basis			Fresh weight basis		
	Number of sub-samples	Range	Average			Number of sub-samples	Range	Average	Number of sub-samples	Range	Average
FRUITS, FRESH—CONTINUED											
Berries—Continued											
Dewberries											
Red raspberries	5	.0050-.0064	.0059	.043	2	.0023-.0033	.0023	2	.0034-.0035	.0035	
Strawberries	4	.0033-.0073	.0051	.063	3	.0012-.0016	.0014	3	.0014-.0022	.0018	
Cantaloups	3	.0079-.0092	.0087	.091	1		.0088	2	.0080-.0096	.0088	
Cherries, Bing	2	.0073-.0078	.0076	.037	2	.0031-.0036	.0034	2	.0023-.0027	.0025	
Figs											
Grapefruit	2	.0026-.0029	.0028	.028	1		.0014	1		.0015	
Grapes:											
Green	3	.0046-.0054	.0050	.026	2	.0009-.0011	.0010	2	.0017-.0018	.0018	
Red	2	.0060-.0068	.0064	.034	2	.0029-.0031	.0030	2	.0031-.0033	.0032	
Honeydew melon	2	.0077-.0077	.0077	.084	2	.0034-.0041	.0038	1		.0044	
Jujubes											
Lemons	5	.0042-.0102	.0063	.070	3	.0016-.0043	.0025	3	.0018-.0029	.0024	
Limes	3	.0035-.0039	.0037	.036	2	.0016-.0035	.0026	2	.0022-.0027	.0025	
Nectarines											
Oranges	5	.0036-.0055	.0045	.033	3	.0013-.0044	.0025	3	.0018-.0029	.0024	
Orange juice											
Peaches, yellow	2	.0021-.0024	.0023	.020	2	.0002-.0003	.0003	1		.0009	
Pears	2	.0035-.0035	.0035	.024	1		.0006	1		.0008	
Pineapple	3	.0025-.0048	.0040	.029	3	.0015-.0017	.0016	3	.0013-.0016	.0014	
Plums:											
Italian prune											
Red	3	.0025-.0034	.0030	.017	2	.0002-.0007	.0005	2	.0008-.0010	.0009	
Yellow	2	.0014-.0014	.0014	.012	2	.0001-.0002	.0002	1		.0004	
Rhubarb	3	.0024-.0032	.0029	.052				1		.0005	
Tangerines	2	.0041-.0044	.0043	.038	1		.0014	1		.0012	
Watermelon	5	.0006-.0008	.0007	.008	4	.0001-.0005	.0004	3	.0002-.0005	.0003	
FRUITS, DRIED											
Apricots	4	.0038-.0050	.0046	.006	2	.0004-.0027	.0016	2	.0015-.0016	.0016	
Dates	4	.0232-.0265	.0245	.030	2	.0103-.0116	.0110	2	.0071-.0106	.0089	
Figs	4	.0117-.0179	.0146	.019	1		.0032	1		.0052	
Mixed fruit	6	.0009-.0034	.0018	.002	1		.0001	1		.0004	
Peaches	2	.0034-.0056	.0045	.006	1		.0033	1		.0019	
Prunes	4	.0052-.0065	.0060	.008	3	.0026-.0036	.0030	2	.0036-.0043	.0040	
Raisins, seedless	4	.0079-.0123	.0106	.013	2	.0068-.0076	.0072	2	.0060-.0071	.0066	
CEREALS AND OTHER GRAIN PRODUCTS											
Breads:											
Cracked wheat	4	.0231-.0333	.0290	.042							
Dark wheat	5	.0273-.0387	.0335	.049							
Rye	3	.0208-.0272	.0238	.037							
Vienna	4	.0108-.0159	.0134	.018							
White	2	.0162-.0163	.0163	.024							

TABLE 9.—Total and free folic acid in edible portions of foods, determined by microbiological assay with *L. casei* and *S. faecalis*—Continued

Food	Source	Moisture (percent)	Fat (percent)	Total folic acid content (mg./100 gm.)				
				<i>L. casei</i>				
				Fresh weight basis			Dry weight, average	Dry weight fat-free
				Number of sub-samples	Range	Average		
CEREALS AND OTHER GRAIN PRODUCTS—CONTINUED								
Breakfast cereals:								
Cornflakes	Washington, D. C., market	4.0		3	.0033–.0070	.0050	.005	
Corn meal:								
White	do.	7.6		4	.0064–.0068	.0067	.007	
Yellow	do.	8.6		4	.0055–.0073	.0064	.007	
Corn and soya	do.	2.0		4	.0510–.0700	.0616	.063	
Hominy grits	do.	8.5		8	.0025–.0065	.0038	.004	
Oat, ready to eat	do.	3.7		3	.0216–.0250	.0227	.024	
Oat, precooked infant food	Special sample	4.4		4	.0385–.0395	.0388	.041	
Oatmeal	Washington, D. C., market	8.0		4	.0275–.0312	.0298	.032	
Rice, ready to eat	do.	4.5		4	.0058–.0060	.0059	.006	
Wheat bran	do.	4.4		3	.0733–.0836	.0796	.083	
Wheat farina	do.	9.8		4	.0073–.0182	.0129	.014	
Wheat flakes	do.	3.5		4	.0160–.0195	.0178	.018	
Wheat, malted barley, etc.	do.	2.7		5	.0235–.0422	.0330	.034	
Wheat, precooked infant food	Special sample	3.6		4	.0526–.0690	.0608	.063	
Wheat, shredded:								
Brand I	Washington, D. C., market	7.0		3	.0272–.0310	.0292	.032	
Brand II	do.	4.2		4	.0451–.1099	.0716	.075	
Flour:								
Cake, unenriched	Special sample	8.1		4	.0041–.0058	.0050	.005	
Gluten	do.	4.9		6	.0238–.0297	.0270	.028	
Rye	Washington, D. C., market	10.1		2	.0161–.0164	.0163	.018	
Soy	Special sample			2			.355	
	do.			2			.400	
White, enriched	Washington, D. C., market	9.9		4	.0061–.0080	.0067	.007	
	do.	10.6		4	.0031–.0075	.0057	.006	
	do.	9.9		4	.0074–.0095	.0081	.009	
Whole wheat	do.	10.2		2	.0350–.0370	.0360	.040	
Grains:								
Barley	1948 crop; composite U. S. sample	11.1		5	.0300–.0650	.0404	.045	
Corn, yellow	do.	10.7		5	.0130–.0365	.0234	.026	
Flaxseed	do.	5.9		5	.0316–.0730	.0467	.050	
Oats, white	do.	10.7		5	.0160–.0263	.0235	.026	
Rice:								
Brown:								
	Arkansas Experiment Station	4.9		3	.0158–.0310	.0209	.022	
	Louisiana Experiment Station	4.7		2	.0310–.0355	.0333	.035	
	Washington, D. C., market	9.4		4	.0108–.0120	.0113	.012	
	Louisiana Experiment Station	4.7		5	.0172–.0368	.0234	.025	
	Washington, D. C., market	11.2		2	.0122–.0130	.0126	.014	
	Louisiana Experiment Station	4.8		2	.0140–.0178	.0159	.017	
Milled:								
	Arkansas Experiment Station	5.1		4	.0103–.0180	.0141	.015	
Rough:								
	do.	4.8		2	.0290–.0290	.0290	.031	
	Louisiana Experiment Station	4.3		5	.0265–.0324	.0298	.031	
Rye	1948 crop; composite U. S. sample	11.0		3	.0304–.0365	.0336	.038	
Sorghum, grain:								
White kafir	do.	10.9		5	.0153–.0212	.0183	.021	
Yellow milo	do.	10.2		4	.0181–.0260	.0214	.024	
Wheat:								
Durum	do.	9.5		7	.0165–.0356	.0270	.030	
Hard Red Spring	do.	8.5		7	.0273–.0530	.0408	.045	
Hard Red Winter	do.	10.4		6	.0295–.0447	.0356	.040	
Red Durum	do.	8.4		6	.0267–.0370	.0314	.034	
Soft Red Winter	do.	10.6		7	.0245–.0335	.0306	.034	
White	do.	10.6		7	.0340–.0420	.0379	.042	
MILK AND CHEESE								
Milk:								
Buttermilk	Texas A. and M. College Creamery	87.9		3	.0061–.0137	.0111	.092	

TABLE 9.—Total and free folic acid in edible portions of foods, determined by microbiological assay with *L. casei* and *S. faecalis*—Continued

Food	Total folic acid content (mg./100 gm.)					Free folic acid content (mg./100 gm.)					
	<i>S. faecalis</i>					<i>L. casei</i>			<i>S. faecalis</i>		
	Fresh weight basis			Dry weight average	Dry weight fat-free	Fresh weight basis			Fresh weight basis		
	Number of sub-samples	Range	Average			Number of sub-samples	Range	Average	Number of sub-samples	Range	Average
CEREALS AND OTHER GRAIN PRODUCTS—CONTINUED											
Breakfast cereals:											
Cornflakes	2	.0045-.0076	.0061	.006	2	.0019-.0025	.0022	1		.0033	
Corn meal:											
White	4	.0084-.0117	.0100	.011	2	.0016-.0016	.0016	3	.0016-.0030	.0023	
Yellow	4	.0076-.0116	.0101	.011	4	.0019-.0035	.0028	2	.0029-.0033	.0031	
Corn and soya	4	.0915-.1071	.0987	.101	2	.0135-.0207	.0171	3	.0090-.0127	.0114	
Hominy grits	6	.0040-.0049	.0045	.005	2	.0018-.0024	.0021	2	.0024-.0034	.0029	
Oat, ready to eat	2	.0215-.0228	.0222	.023	1		.0059	1		.0066	
Oat, precooked infant food	4	.0429-.0547	.0476	.050	1		.0156	2	.0188-.0195	.0192	
Oatmeal	4	.0208-.0396	.0312	.034	3	.0046-.0092	.0064	2	.0061-.0121	.0091	
Rice, ready to eat	4	.0063-.0127	.0094	.010	2	.0033-.0035	.0034	2	.0055-.0057	.0056	
Wheat bran	3	.1058-.1508	.1208	.126	2	.0225-.0258	.0242	2	.0385-.0546	.0466	
Wheat farina	4	.0113-.0169	.0143	.016	3	.0042-.0065	.0052	2	.0056-.0085	.0071	
Wheat flakes	4	.0235-.0375	.0290	.030	2	.0096-.0098	.0097	2	.0120-.0128	.0124	
Wheat, malted barley, etc.	5	.0406-.0646	.0522	.054	3	.0140-.0300	.0240	2	.0244-.0376	.0310	
Wheat, precooked infant food	4	.0607-.0821	.0712	.074	1		.0368	2	.0245-.0446	.0346	
Wheat, shredded:											
Brand I	2	.0383-.0383	.0383	.041	2	.0082-.0083	.0083	1		.0107	
Brand II	4	.0468-.1369	.0868	.091	2	.0103-.0351	.0227	2	.0184-.0385	.0285	
Flour:											
Cake, unenriched	4	.0071-.0096	.0082	.009							
Gluten	6	.0377-.0468	.0416	.044							
Rye	3	.0165-.0215	.0197	.022							
Soy	2			.460							
	2			.490							
White, enriched											
	4	.0092-.0098	.0095	.011							
	4	.0041-.0103	.0083	.009							
	5	.0095-.0117	.0102	.011							
Whole wheat	2	.0393-.0428	.0410	.046							
Grains:											
Barley	5	.0571-.0625	.0597	.067	4	.0105-.0284	.0171	4	.0182-.0317	.0249	
Corn, yellow	4	.0188-.0308	.0238	.027	3	.0037-.0051	.0045	2	.0044-.0065	.0055	
Flaxseed	4	.0368-.0534	.0470	.050	3	.0153-.0200	.0174	2	.0183-.0298	.0241	
Oats, white	4	.0454-.0663	.0557	.062	2	.0069-.0196	.0133	2	.0261-.0273	.0267	
Rice:											
Brown											
	3	.0237-.0240	.0239	.025	2	.0108-.0118	.0113	2	.0055-.0058	.0056	
	2	.0372-.0400	.0386	.041	1		.0315	1		.0218	
	3	.0180-.0196	.0186	.021	3	.0051-.0059	.0056	3	.0081-.0091	.0088	
	6	.0210-.0378	.0281	.030	2	.0086-.0089	.0088	3	.0067-.0094	.0083	
	2	.0190-.0208	.0199	.022	2	.0066-.0066	.0066	2	.0094-.0094	.0094	
	2	.0161-.0189	.0175	.018	1		.0078	1		.0058	
Milled											
	5	.0094-.0181	.0141	.015	3	.0057-.0081	.0073	3	.0035-.0067	.0056	
Rough											
	3	.0278-.0378	.0336	.035	2	.0110-.0220	.0165	2	.0118-.0200	.0159	
	5	.0381-.0430	.0409	.043	3	.0132-.0182	.0149	3	.0181-.0217	.0199	
Rye	3	.0270-.0442	.0352	.040	2	.0106-.0200	.0153	2	.0098-.0147	.0123	
Sorghum, grain:											
White kafir	5	.0177-.0263	.0226	.025	3	.0035-.0064	.0052	3	.0020-.0084	.0055	
Yellow milo	4	.0177-.0250	.0223	.025	3	.0085-.0125	.0103	3	.0071-.0151	.0122	
Wheat:											
Durum	7	.0350-.0633	.0504	.056	2	.0134-.0135	.0135	1		.0302	
Hard Red Spring	7	.0368-.0650	.0511	.056	2	.0130-.0157	.0144	1		.0306	
Hard Red Winter	7	.0350-.0443	.0397	.044	3	.0063-.0102	.0088	2	.0127-.0157	.0142	
Red Durum	6	.0462-.0603	.0526	.057	2	.0085-.0281	.0183	2	.0182-.0350	.0266	
Soft Red Winter	7	.0256-.0810	.0493	.055	3	.0045-.0109	.0079	2	.0164-.0173	.0169	
White	7	.0369-.0493	.0434	.049	2	.0062-.0079	.0071	2	.0143-.0146	.0145	
MILK AND CHEESE											
Milk:											
Buttermilk											

TABLE 9.—Total and free folic acid in edible portions of foods, determined by microbiological assay with *L. casei* and *S. faecalis*—Continued

Food	Source	Moisture (percent)	Fat (percent)	Total folic acid content (mg./100 gm.)				
				<i>L. casei</i>				
				Fresh weight basis			Dry weight, average	Dry weight fat-free
				Number of sub- samples	Range	Average		
MILK AND CHEESE—CON.								
Milk—Continued								
Evaporated.....	Canned.....	72.9		10	.0003- .0012	.0007	.003	
Nonfat dry.....	Special sample.....	2.2		3	.0015- .0033	.0024	.002	
Pasteurized.....	Texas A. and M. College Creamery.....	86.9		3	.0003- .0009	.0006	.005	
Cheese:								
Cheddar.....	New York State.....	34.6		4	.0122- .0126	.0124	.019	
	Wisconsin.....	33.4		2	.0167- .0225	.0196	.029	
Cottage.....	Washington, D. C., market.....	72.8		4	.0253- .0287	.0265	.097	
	Texas A. and M. College Creamery.....	77.2		3	.0169- .0242	.0208	.091	
Processed.....	Composite of several types.....	34.2		4	.0094- .0127	.0106	.016	
MISCELLANEOUS								
Bacto liver extract.....	Special sample.....			20	.7605-1.0000	.8987		
Brewer's yeast.....	do.....			2			1.965	
Casein, vitamin-free.....	do.....	5.3		3	.0042- .0049	.0046	.005	
Fat, hydrogenated.....	do.....			4	.00000- .00008	.00004		
Liver concentrate.....	do.....			2			1.817	
Spinach, dried.....	do.....	2.4		55	.8600-1.3900	1.0600	1.086	
Yeast residuals.....	do.....			10	.7700- .9500	.8630		

TABLE 9.—Total and free folic acid in edible portions of foods, determined by microbiological assay with *L. casei* and *S. faecalis*—Continued

Food	Total folic acid content (mg./100 gm.)					Free folic acid content (mg./100 gm.)				
	<i>S. faecalis</i>					<i>L. casei</i>			<i>S. faecalis</i>	
	Fresh weight basis			Dry weight average	Dry weight fat-free	Fresh weight basis			Fresh weight basis	
	Number of sub-samples	Range	Average			Number of sub-samples	Range	Average	Number of sub-samples	Range	Average
MILK AND CHEESE—CON.										
Milk—Continued										
Evaporated.....	10	.0003- .0039	.0022	.008						
Nonfat dry.....	3	.0025- .0039	.0034	.003						
Pasteurized.....										
Cheese:										
Cheddar.....	4	.0137- .0150	.0146	.022						
Cottage.....	4	.0443- .0517	.0465	.171						
Processed.....	5	.0108- .0133	.0116	.018						
MISCELLANEOUS										
Bacto liver extract.....	20	.7840-1.0660	.9692		4	.7200- .8437	.7909	4	.7780- .9000	.8340
Brewer's yeast.....	2			2.180						
Casein, vitamin-free.....	2	.0063- .0068	.0065	.007						
Fat, hydrogenated.....	4	Not measurable								
Liver concentrate.....	2			1.972						
Spinach, dried.....	56	.8200-1.3900	1.0970	1.124						
Yeast residuals.....	10	.7400-1.0020	.8670							

PART II. COMPILED DATA ON FOLIC ACID CONTENT OF FOODS

The present compilation of values for the folic acid content of foods (table 10) includes most of the data made available from 1941 through early 1951. During this period the methods were being developed and improved. The results reflect varying degrees of progress toward standardization and should be compared with this in mind. A summary of the results of collaborative assays undertaken in 1947, 1948, and 1949 by the Association of Official Agricultural Chemists (43, 44, 45) has been included to demonstrate the improvement in methods for the determination of folic acid in foods.

Studies reporting data on the folic acid content of foods were found in many different types of journals, including some foreign publications not generally available. In addition to the values found in studies of the folic acid content of foods, numerous values were found in reports primarily concerned with comparative studies, which are of special interest to the research worker. Such investigations included studies on completeness of extraction and degradation of conjugated forms, variation in methods, nutritional requirements of poultry, bacterial synthesis, storage of fresh, frozen, and canned products, variety, maturity, and processing.

Results of early assays were based on arbitrary standards of potency and were reported in terms of concentrates of folic acid produced from spinach. These concentrates were designated as having a potency such as 3,100 or 40,000 times the potency of a special liver fraction with an assumed folic acid potency of one. The noncrystalline spinach concentrate, regarded as nearly pure folic acid, has been reported as having a potency of 137,000 times the standard liver fraction (60). Crystalline folic acid standards from other sources have been reported as having potencies of 160,000 and 200,000 times the standard liver preparation (83, 95). Since there was no agreement on the potency of pure folic acid in terms of the special liver fraction, the figure 200,000 was selected for use in recalculating the values reported in table 10 in terms of a low potency standard (95). Pure or nearly pure crystalline standards were available for later studies.

All values in this table, except where otherwise noted, have been reported in terms of milligrams of folic acid per 100 gm. of food. Since different units were used by the various authors, simple calculations were necessary to convert the reported figures to this basis. Because the authors had expressed their data to different decimal places, differences appear in this table.

Explanation of the Table of Compiled Values

Foods for which one or more analyses were available from published and unpublished sources are listed in alphabetical order in the first column of table 10. Subclassifications as raw, canned, dried, defatted, and sprouted are included in this column.

The second column describes the sample from data given by the author concerning the origin, variety, season, age, size, number of samples, diets, scientific name, and for some foreign articles, the local name. In a few experiments the sample had been divided into several portions that were subjected to various conditions of storage.

The third column includes notes on the preliminary treatment of the sample which in most cases was used to release bound folic acid as well as to convert conjugates to the monoglutamic acid compound. The use of two enzyme preparations simultaneously is indicated by a hyphen between the names of the preparations. Treatments involving successive procedures are shown by separating the stages by semicolons. Some foods for which data have been reported in Part I of this publication were tested by both organisms under conditions considered suitable for yielding data for both "free" and "total" folic acid. In a very few cases comparisons of methods or variations in methods have been reported. These are indicated after the comments on preliminary treatment. When the potency of an impure standard has been designated, the value is given in italics

after the notes concerning preliminary treatment of the sample. In this compilation the value 200,000 has been used for the potency of pure folic acid to convert the reported figure, which is in terms of an impure standard, to a value in terms of pure folic acid. Both values are shown in table 10, with the reported value in italics and the calculated value in brackets on the following line. The calculated values should be considered approximations only.

Most studies on the folic acid content of food have been made by microbiological assays with either *Streptococcus faecalis* or *Lactobacillus casei* as test organisms. Values obtained by the use of these two organisms are listed in columns 4a, 4b, 5a, and 5b. Column 6a is used for the few instances when an average value has been given for tests made with both organisms or when a value has been reported but the test organism has not been specified.

Values obtained by biological and chemical assays are listed in column 7a. Only two reports have been noted for folic acid estimations by chemical methods.

The term "moisture-free" basis has been reserved for those values reported on such a basis and are listed in columns 4b, and 5b. All other values are listed under "moist" basis in columns 4a, 5a, 6a, and 7a, and represent the product as described, that is, raw, canned, cured, defatted, dried, smoked, etc.

The final column of this table lists the references to the sources of the data.

TABLE 10.—Compiled data on the folic acid content of foods

Values obtained with impure standards have been recalculated on the basis of potency 200,000 for pure folic acid and are given on the following line. Values in column (b) under each method heading represent calculations on a moisture-free basis. All other values are listed under column (a) and represent the product as described.

Item (1)	Description of sample* (2)	Preliminary treatment of sample; method; potency designation of impure standard (in italics) (3)	Folic acid (mg./100 gm.)						Reference No. (8)
			Microbiological assays					Other assays	
			<i>S. faecalis</i>		<i>L. casei</i>		<i>S. faecalis</i> or <i>L. casei</i> or both	Moist basis (7a)	
			Moist basis (4a)	Moisture- free basis (4b)	Moist basis (5a)	Moisture- free basis (5b)	Moist basis (6a)		
Almond	Washington, D. C., market; 10 <i>S. faecalis</i> , 9 <i>L. casei</i> .	Buffered; autoclaved; chicken pancreas; average and range.	{ 0.0454 .0360-.0584	0.047	{ 0.0447 .0275-.0680	0.047	-----	114	
Apple and various parts: Raw	1 sample, 5 specimens.....	Takadiastase-papain; 40,000 [200,000].....	.008 [.0016]	.055 [.011]	-----	-----	-----	25	
	1 sample.....	Takadiastase.....	.001	-----	-----	-----	-----		
	Anton.....	Buffered; heated 45 minutes (abstract); chemical method.	-----	-----	-----	-----	0.317	8	
	Red Delicious; Washington, D. C., market: Whole calculated from peeled +peel.	Buffered; autoclaved; chicken pancreas; average.	[.0009]	[.006]	[.0005]	[.003]	-----	114	
	Peeled; 5 <i>S. faecalis</i> , 6 <i>L. casei</i> .	Buffered; autoclaved; chicken pancreas; average and range.	{ .0007 .0005-.0009 .0016	.005	{ .0004 .0003-.0006 .0010	.003	-----		
	Peel: 9 <i>S. faecalis</i> , 10 <i>L. casei</i> .	do.....	.0014-.0020	.009	.0008-.0012	.005	-----		
	Winesap; Washington, D. C., market: Whole calculated from peeled +peel.	Buffered; autoclaved; chicken pancreas; average.	[.0008]	[.006]	[.0006]	[.004]	-----		
	Peeled; 5 <i>S. faecalis</i> , 6 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	{ .0007 .0005-.0011 .0014	.005	{ .0005 .0002-.0007 .0010	.003	-----		
	Peel; 9 <i>S. faecalis</i> , 10 <i>L. casei</i> .	do.....	.0013-.0016	.008	.0007-.0011	.006	-----		
	Winesap; Texas market: Whole; 4.....	do.....	-----	-----	{ .0012 .0008-.0014 .0008	.007	-----		
Peeled; 4.....	do.....	-----	-----	.0006-.0012	.005	-----			
Apricot: Raw	Washington, D. C., market: 1 <i>S. faecalis</i> , 2 <i>L. casei</i>	Buffered; autoclaved; average and range	.0003	-----	{ .0005 .0001-.0008 .0025	-----	-----		
5.....	Buffered; autoclaved; chicken pancreas; average and range.	{ .0027 .0016-.0048	.021	{ .0007-.0063 .0047	.020	-----			
Texas market; 4.....	do.....	-----	-----	.0043-.0049	.036	-----			

Dried	Composite of several brands:								
	2	Buffered; autoclaved; average and range	.0016		.0016				
			.0015-.0016		.0004-.0027				
	4 <i>S. faecalis</i> , 2 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	.0046	.006	.0047	.006			
			.0038-.0050		.0044-.0049				
Asparagus:									
Raw	Garden or retail sample	Water extract	.048		.042				90
		Acid hydrolysis	.018		.013				
		Alkaline hydrolysis	.033		.034				
		Takadiastase	.048		.044				
	Garden or greenhouse sample	Buffered; heated 3 minutes; hog kidney	.124	1.20	.118	1.17			41
	Garden or greenhouse sample	do.		1.200		1.200			
	Stored in a wax bag:								
	1 day at room temperature	do.		.930		.750			
	2 days at room temperature	do.		.560		.560			
	3 days at room temperature	do.		.320		.260			
	1 week in refrigerator	do.		.880		.910			
	2 weeks in refrigerator	do.		.840		.720			
	1 week in crushed ice	do.		.990		.960			
	2 weeks in crushed ice	do.		1.400		1.100			
	High-quality sample	Takadiastase	.010						120
		Hog kidney	.014						
	Washington, D. C., market:								
	2	Buffered; autoclaved; average and range	.0584		.0608				114
			.0568-.0600		.0575-.0640				
	4	Buffered; autoclaved; chicken pancreas; average and range.	.0857	1.279	.0893	1.333			
			.0584-.1150		.0740-.1100				
	Washington, D. C., market	Buffered; autoclaved	.016						114
		Buffered; autoclaved; takadiastase	.017						
		Buffered; autoclaved; chicken pancreas	.025						
	Texas A. and M. College Farm;	Buffered; autoclaved; chicken pancreas; average and range.			.1425	1.469			59
	2				.1384-.1466				
Canned	Green; solid and liquid; 10 samples, 60 cans.	Takadiastase; average and range	.0058		.0090				
			.0032-.0079		.0062-.0112				
		Buffered; heated 3 minutes; hog kidney	.022	.353	.021	.337			41
Avocado:									
Raw	Aguacate (<i>Persea gratissima</i> L.)	Takadiastase	.026	.091					50
		Rat growth method; fed 2.0 gm. per day					.07		11
	<i>Persea gratissima</i> L.	Rat growth method; fed 1.0 gm. per day					.11		
		Rat growth method; fed 0.5 gm. per day					.14		
	Washington, D. C., market:								
	2	Buffered; autoclaved; average and range	.0174		.0178				114
			.0127-.0221		.0138-.0218				
	3	Buffered; autoclaved; chicken pancreas; average and range.	.0440	.135	.0567	.175			
			.0430-.0446		.0530-.0610				
	Fuerte; Texas market; 2	do.			.0058	.018			
					.0048-.0067				
Banana:									
Raw	1 sample, 6 specimens	Takadiastase-papain; 40,000	.095	.39					25
		[200,000]	[.019]	[.078]					
		Takadiastase; 40,000	.096						117
		[200,000]	[.0192]						
	Slightly green; 3 samples	Takadiastase	.013		.021				90
	Ripe; 3 samples	do.	.007		.015				
	Very ripe; 4 samples	do.	.004		.008				
	Washington, D. C., market:								
	2	Buffered; autoclaved; average and range	.0060		.0063				114
			.0046-.0073		.0059-.0067				

* Numerals used in column 2 for Reference No. 114 refer to the number of subsamples per lot or to the number of determinations of special samples.

TABLE 10.—Compiled data on the folic acid content of foods—Continued

Item (1)	Description of sample* (2)	Preliminary treatment of sample; method; potency designation of impure standard (in italics) (3)	Folic acid (mg./100 gm.)					Reference No. (8)	
			Microbiological assays						Other assays
			<i>S. faecalis</i>		<i>L. casei</i>		<i>S. faecalis</i> or <i>L. casei</i> or both		Moist basis (7a)
			Moist basis (4a)	Moisture- free basis (4b)	Moist basis (5a)	Moisture- free basis (5b)	Moist basis (6a)		
36 Banana—Con. Raw—Continued	Washington, D.C., market—Con. 3.....	Buffered; autoclaved; chicken pancreas; average and range.	{ .0102 .0093-.0113	.038	.0109 .0094-.0138	.040 .032	114		
	Texas market; 2.....	do.			{ .0082 .0067-.0097				
	Dwarf.....	Plátano dominico (<i>Musa cavendishii</i> Lam.)	Takadiastase.....	.022	.074			50	
	India.....	Plátano morado (<i>Musa rosacea</i> Jacq.)	do.	.012	.060		50		
	Barley: Whole grain.....		Takadiastase-papain; 3, 100 [200,000].....		1.45 [.0225]			20	
		Ground.....	{ Buffered; heated 3 minutes; hog kidney; method a. Buffered; heated 3 minutes; hog kidney; method b.	.063		.051 .047		91	
		Feedstuff; 5 samples.....	Buffered; autoclaved; hog kidney; average and range.	{ .049 .039-.063		.041 .029-.051		41	
		Feedstuff; 3 tests.....	Chick growth method; average and range				{ .06 .00-.14	75	
		1948 crop; composite U. S. sample: 4.....	Buffered; autoclaved; average and range	{ .0249 .0182-.0317		.0171 .0105-.0284		114	
		5.....	Buffered; autoclaved; chicken pancreas; average and range.	{ .0597 .0571-.0625	.067	.0404 .0300-.0650	.045		
Sprouted, dehydrated		Seed, shoot, and root.....	Takadiastase-papain; 3, 100 [200,000].....		5.00 [.0775]		20		
Bean and bean products: Broad:	Raw.....	Haba (verde) (<i>Vicia faba</i> L.)	Takadiastase.....	.127	.408		50		
	Dry seed.....	Haba (sin cáscara) (<i>Vicia faba</i> L.)	do.	.162	.176				
	do.	do.	do.	.173	.188				
Common or kidney: Snap green: Raw.....	High-quality sample.....	{ Takadiastase Hog kidney	.021 .052				120		

Ejotes (<i>Phaseolus vulgaris</i> L.) - Garden or retail; 2 samples	Takadiastase	.010	.080					50
	Takadiastase; average and range	.051 .043-.059		.041 .040-.041				
Garden or retail sample	Takadiastase		.199			.185		90
	do		.108			.129		
Stored 3 days at room temperature.	do		.222			.222		41
	do		.216			.204		
Stored 13 days in refrigerator	do		.62	.071		.62		41
	do		.48-.82	.051-.081		.48-.77		
Stored 13 days iced	do		.500			.480		41
	do		.310			.290		
Garden or greenhouse; 4 samples.	Buffered; heated 3 minutes; hog kidney; average and range.	.071 .054-.090		.071 .051-.081		.62 .48-.77		41
	do		.500			.480		
Garden or greenhouse sample Stored in a wax bag:	do		.310			.290		41
	do		.220			.250		
1 day at room temperature.	do		.280			.370		41
	do		.340			.410		
3 days at room temperature.	do	.093	1.02	.079		.87		41
	do	.090	.69	.081		.62		
1 week in refrigerator	do							41
	do							
1 week in crushed ice	do							41
	do							
Small beans from 3 plants	do	.093	1.02	.079		.87		41
Large beans from same 3 plants.	do	.090	.69	.081		.62		
Washington, D. C., market:								41
1 <i>S. faecalis</i> , 2 <i>L. casei</i>	Buffered; autoclaved; average and range	.0107		.0116 .0046-.0185				
2 <i>S. faecalis</i> , 3 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	.0190 .0168-.0211	.207	.0228 .0168-.0280		.248		41
	do							
Washington, D. C., market:								41
4	Buffered; autoclaved; average and range	.0111 .0105-.0117		.0090 .0084-.0093				
3 <i>S. faecalis</i> , 4 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	.0232 .0220-.0246	.286	.0179 .0139-.0212		.221		41
	do							
Washington, D. C., market:								41
4	Buffered; autoclaved; average and range	.0112 .0104-.0126		.0114 .0105-.0122				
3 <i>S. faecalis</i> , 4 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	.0187 .0181-.0191	.189	.0172 .0154-.0203		.174		114
	do							
Washington, D. C., market	Buffered; autoclaved; chicken pancreas	.0238		.0255				114
Texas market; 3	Buffered; autoclaved; chicken pancreas; average and range.			.0312 .0288-.0337		.380		
Texas market; 2	do			.0136 .0115-.0156		.174		114
	do			.0406 .0378-.0433		.495		
Kentucky Wonder; Texas market; 2.	do			.0270 .0259-.0280		.201		114
	do			.0191 .0169-.0213		.203		
Bountiful; Texas A. and M. College Farm; 2.	do			.0152 .0128-.0176		.132		114
	do			.0077 .0040-.0110				
Stringless Black Valentine; Texas A. and M. College Farm; 2.	do			.0077 .0040-.0110				59
	do			.0191 .0169-.0213		.203		
Tendergreen; Texas A. and M. College Farm; 2.	do			.0152 .0128-.0176		.132		59
	do			.0077 .0040-.0110				
Canned - Solid and liquid; 11 samples, 66 cans.	Takadiastase; average and range	.0029 .0012-.0083		.0077 .0040-.0110				59
	do			.0191 .0169-.0213		.203		
Solid and liquid; 2 samples, 2 cans.	Buffered; heated 3 minutes; hog kidney	.011	.190	.007		.127		41
	Takadiastase; average					.005		
Stored 2 months at 70° F.	do					.002		17
	do					.001		
Stored 2 months at 90° F.	do					.001		17
	do					.003		
Stored 2 months at 100° F.	do					.003		17
	do					.002		
Stored 4 months at 70° F.	do					.002		17
	do					.002		
Stored 4 months at 90° F.	do					.002		17
	do					.002		
Stored 4 months at 100° F.	do					.002		17
	do					.002		

* Numerals used in column 2 for Reference No. 114 refer to the number of subsamples per lot or to the number of determinations of special samples.

TABLE 10.—Compiled data on the folic acid content of foods—Continued

Item (1)	Description of sample* (2)	Preliminary treatment of sample; method; potency designation of impure standard (in italics) (3)	Folic acid (mg./100 gm.)						Reference No. (8)
			Microbiological assays					Other assays	
			<i>S. faecalis</i>		<i>L. casei</i>		<i>S. faecalis</i> or <i>L. casei</i> or both	Moist basis (7a)	
			Moist basis (4a)	Moisture- free basis (4b)	Moist basis (5a)	Moisture- free basis (5b)	Moist basis (6a)		
Beans-etc. —Continued Common or Kidney—C Snap wax: Raw	Continued								
	Garden or greenhouse; 2 samples.	Buffered; heated 3 minutes; hog kidney; average and range.	.027 .018-.035	.27 .16-.38	.023 .013-.033	.24 .12-.36			41
	Golden wax; Texas market; 2	Buffered; autoclaved; chicken pancreas; average and range.			.0357 .0328-.0385	.415			
	do	do			.0198 .0172-.0224	.260			
	Kentucky Wonder; Texas A. and M. College Farm; 2.	do			.0308 .0308-.0308	.220			114
	Stringless; Texas A. and M. College Farm; 2.	do			.0390 .0380-.0399	.443			
	Sure Crop; Texas A. and M. College Farm; 2.	do			.0375 .0353-.0396	.368			
	Canned								
	Dry seeds								
	Frijol bayo (<i>Phaseolus vulgaris</i> L.)	Buffered; heated 3 minutes; hog kidney	.008	.182	.006	.136			41
	Red kidney (<i>Phaseolus vulgaris</i> L.)	Takadiastase	.101	.110					50
	Red kidney; composite of several brands:	Fed boiled and dried; rat growth method						.50	11
	1	Buffered; autoclaved	.1275		.1160				114
	4 <i>S. faecalis</i> , 3 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	.1880 .1742-.1958	.208	.1727 .1550-.1860	.191			
	Navy (<i>Phaseolus vulgaris</i> L.)	Fed boiled and dried; rat growth method						.31	11
	Navy; Texas market; 2	Buffered; autoclaved; chicken pancreas; average and range.			.1453 .1418-.1488	.161			
	Navy; composite of several brands:								
	2	Buffered; autoclaved; average and range	.0108 .0090-.0126		.0327 .0285-.0369				114
	4 <i>S. faecalis</i> , 3 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	.1363 .1275-.1474	.154	.1133 .0940-.1440	.128			
	Pinto; Texas market; 2	do			.0718 .0662-.0773	.079			114
Pinto; composite of several brands:									
1 <i>S. faecalis</i> , 2 <i>L. casei</i>	Buffered; autoclaved; average and range	.0072		.0167 .0124-.0210				114	
4 <i>S. faecalis</i> , 3 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	.0970 .0738-.1157	.106	.0973 .0960-.1000	.106				

Cowpea:

Snap-----

1947 horticultural duplicates analyzed:

Alabunch-----	Buffered; autoclaved; chicken pancreas; average.	.100	.918			
Alacrowder-----	do.	.087	.800			
Asparagus-----	do.	.138	1.190			
California No. 5-----	do.	.062	.588			
Chinese Red-----	do.	.095	.830			
Extra Early Blackeye-----	do.	.075	.697			
Long Pod Cream-----	do.	.133	1.330			
Bunch Purple Hull-----	do.	.080	.806			
Above 8 varieties in 1947-----	Average	.096	.895			
Above 8 varieties including every determination.	Range	.058-.235	.558-2.020			

California No. 5:

1947, old-----	Buffered; autoclaved; chicken pancreas		.619			
Duplicate from same plot-----	do.		.558			
1948, June 11, young-----	do.		.530	.552		
Duplicate from same plot-----	do.		.676	.525		
1948, June 16, young-----	do.		.452	.552		
Duplicate from same plot-----	do.		.432	.550		
1948, June 11, old-----	do.		.716	.344		
Duplicate from same plot-----	do.		.548	.312		
1948, June 16, old-----	do.		.576	.635		
Duplicate from same plot-----	do.		.326	.657		

Shell-----

1947 horticultural duplicates analyzed:

Alabunch-----	Buffered; autoclaved; chicken pancreas; average.	.014	.034			
Alacrowder-----	do.	.024	.061			
Blackeye Crowder No. 21-----	do.	.019	.046			
Blackeye No. 8152-----	do.	.038	.087			
California No. 5-----	do.	.037	.087			
Chinese Red-----	do.	.020	.044			
Extra Early Blackeye-----	do.	.045	.130			
Long Pod Cream-----	do.	.061	.155			
Bunch Purple Hull-----	do.	.041	.115			
Regular Purple Hull-----	do.	.034	.083			
Above 10 varieties in 1947-----	Average	.033	.084			
Above 10 varieties including every determination.	Range	.010-.116	.027-.390			

California No. 5:

1948, June 11, fleshy pods-----	Buffered; autoclaved; chicken pancreas		.426	.298		
Duplicate from same plot-----	do.		.297	.240		
1948, June 16, fleshy pods-----	do.		.185	.459		
Duplicate from same plot-----	do.		.151	.443		
1948, June 11, membranous pods.	do.		.313	.318		
Duplicate from same plot-----	do.		.403	.228		
1948, June 16, membranous pods.	do.		.186	.273		
Duplicate from same plot-----	do.		.135	.292		
1948, June 11, yellow green pods.	do.		.336	.106		
Duplicate from same plot-----	do.		.254	.419		
1948, June 16, yellow green pods.	do.		.162	.243		

* Numerals used in column 2 for Reference No. 114 refer to the number of subsamples per lot or to the number of determinations of special samples.

TABLE 10.—Compiled data on the folic acid content of foods—Continued

Item (1)	Description of sample* (2)	Preliminary treatment of sample; method; potency designation of impure standard (in italics) (3)	Folic acid (mg./100 gm.)					Reference No. (8)		
			Microbiological assays						Other assays	
			<i>S. faecalis</i>		<i>L. casei</i>		<i>S. faecalis</i> or <i>L. casei</i> or both		Moist basis (7a)	
			Moist basis (4a)	Moisture- free basis (4b)	Moist basis (5a)	Moisture- free basis (5b)	Moist basis (6a)			
Beans—Con. Cowpea—Con Shell—Con	Duplicate from same plot.....	Buffered; autoclaved; chicken pancreas	.....	.145	.....	.252	.....	98
	1947, yellow green and yellow pods.....	do.....	.....	.083	.....	.....	.....
	Duplicate from same plot.....	do.....	.....	.093	.....	.....	.....
	1948, June 11, yellow pods.....	do.....	.....	.258	.....	.353	.....		
	Duplicate from same plot.....	do.....	.....	.292	.....	.328	.....		
	1948, June 16, yellow pods.....	do.....	.....	.052	.....	.149	.....		
	Duplicate from same plot.....	do.....	.....	.128	.....	.211	.....		
	Dry seed.....	1 sample, 1 pound.....	Takadiastase-papain; 40,000 [200,000].....	.74 [.148]	.80 [.16]	25
	1947 horticultural duplicates analyzed:	Alabunch.....	Buffered; autoclaved; chicken pancreas; average.....	.413	.455	98
	Alacrowder.....	do.....	do.....	.341	.373	
	Asparagus.....	do.....	do.....	.427	.465	.....	.....	.....
	Blackeye Crowder No. 21.....	do.....	do.....	.395	.439	.....	.....	.....
	Blackeye No. 8152.....	do.....	do.....	.374	.417	.....	.....	.....
	California No. 5.....	do.....	do.....	.352	.387	.....	.....	.....
	Chinese Red.....	do.....	do.....	.213	.232	.....	.....	.....
	Extra Early Blackeye.....	do.....	do.....	.403	.453	.....	.....	.....
	Long Pod Cream.....	do.....	do.....	.442	.489	.....	.....	.....
	Bunch Purple Hull.....	do.....	do.....	.294	.330	.....	.....	.....
	Regular Purple Hull.....	do.....	do.....	.397	.437	.....	.....	.....
	Above 11 varieties in 1947.....	Average.....	do.....	.368	.407	.....	.....	.....
	Above 11 varieties including every determination.....	Range.....	do.....	.136-.689	.150-.749	.....	.....	.....
	1947 California No. 5.....	do.....	do.....	.....	.326	.....	.....	.....
	Replicate from same plot.....	do.....	do.....	.....	.487	.....	.....	.....
	do.....	do.....	do.....	.....	.279	.....	.....	.....
	do.....	do.....	do.....	.....	.454	.....	.....	.....
1948 California No. 5.....	do.....	do.....	.....	.430	.....	.393	.....		
Duplicate from same plot.....	do.....	do.....	.....	.416	.....	.356	.....		
Composite of several brands:	2.....	Buffered; autoclaved; average and range.....	.1217	.....	.1845	.....	.....	114
.....	.....	.....	.1197-.1237	.....	.1590-.2100	.....	.....	
3.....	Buffered; autoclaved; chicken pancreas; average and range.....	.....	.4910	.540	.3867	.425	.....		
.....	.....	.....	.3783-.6430	.....	.3300-.4800	.....	.....	
Hycinch: Dry seed.....	Black beans (<i>Dolichos lablab</i> L.).....	Fed boiled and dried; rat growth method.....	.....	.....	.....	.....	.05	11

Lima:		Autolysis.....	.016							
Raw	Frozen; 1 sample.....	Takadiastase.....	.008							
		Hog kidney.....	.023							120
	Bush; Texas A. and M. College Farm:									
	Clark; 4.....	Buffered; autoclaved; chicken pancreas; average and range.				.0279	.074			
	Fordhook; 2.....	do.....				.0178-.0371				
						.0133	.048			
	Henderson; 5.....	do.....				.0112-.0154				
						.0227	.053			
	Oklahoma; 3.....	do.....				.0185-.0279				
						.0406	.122			
	Peerless; 3.....	do.....				.0237-.0535				
						.0103	.031			
	Thorogrew; 4.....	do.....				.0097-.0112				
						.0324	.081			
						.0302-.0361				
	Pole; Texas A. and M. College Farm:									
	Carolina; 4.....	do.....				.0439	.108			114
						.0301-.0620				
	Florida; 4.....	do.....				.0264	.066			
						.0235-.0340				
	Speckled; 4.....	do.....				.0562	.137			
						.0412-.0742				
	TAES; 2.....	do.....				.0192	.053			
						.0185-.0199				
	Washington, D. C., market:									
	1.....	Buffered; autoclaved.....	.0066			.0047				
	2.....	Buffered; autoclaved; chicken pancreas; average and range.	.0344	.148		.0466	.201			
			.0283-.0405			.0420-.0512				
Dry seed	1 sample, 1 pound.....	Takadiastase-papain; 40,000 [200,000].....	.33 [.066]	.36 [.072]						25
	Composite of several brands:									
	2.....	Buffered; autoclaved; average and range	.0159			.0367				
			.0125-.0193			.0335-.0399				
	3.....	Buffered; autoclaved; chicken pancreas; average and range.	.1347	.148		.1217	.134			114
			.1224-.1424			.1100-.1410				
	Texas market; 2.....	do.....				.0837	.094			
						.0801-.0873				
Mung:										
Dry seed		Takadiastase-papain.....					.255			
		do.....					.239			
Sprouted	Fresh sprouting seeds.....	do.....					.188			21
	do.....	do.....					.205			
Pigeonpea:										
Dry seed	<i>Cajanus cajan</i> (L.) Millsp.....	Fed boiled and dried; rat growth method							.42	11
Soybean:										
Dry seed	Peking.....	Takadiastase-papain.....					.189			
	do.....	do.....					.183			
	Manchu.....	do.....					.169			
	do.....	do.....					.176			
	Mukden.....	do.....					.174			
	do.....	do.....					.161			21
	Lincoln.....	do.....					.188			
	do.....	do.....					.194			
	Dunfield.....	do.....					.201			
	do.....	do.....					.207			

* Numerals used in column 2 for Reference No. 114 refer to the number of subsamples per lot or to the number of determinations of special samples.

TABLE 10.—Compiled data on the folic acid content of foods—Continued

Item (1)	Description of sample* (2)	Preliminary treatment of sample; method; potency designation of impure standard (in italics) (3)	Folic acid (mg./100 gm.)					Reference No. (8)	
			Microbiological assays				Other assays		
			<i>S. faecalis</i>		<i>L. casei</i>		<i>S. faecalis</i> or <i>L. casei</i> or both		Moist basis (7a)
			Moist basis (4a)	Moisture- free basis (4b)	Moist basis (5a)	Moisture- free basis (5b)	Moist basis (6a)		
Beans—Con.									
Soybean—Co	Continued								
Dry seed—	Continued								
	Illini.....	Takadiastase-papain.....				.216			
	do.....	do.....				.199			
	Anwei.....	do.....				.231			
	do.....	do.....				.207			
	Feedstuff; 1 sample.....	Buffered; autoclaved; hog kidney.....	.530		.360				
	1948 crop; composite U. S. sample:								
	4.....	Buffered; autoclaved; average and range	.0959		.0873				
			.0685-1308		.0449-1160				
	8.....	Buffered; autoclaved; chicken pancreas; average and range.	.2563	.277	.1923	.208			
			.1250-3750		.1425-2680				
Flour	1 sample.....	Untreated.....	.046						
		Chicken pancreas.....	.255						
		Hog kidney.....	.280						
		Chicken pancreas; hog kidney.....	.335						
		Buffered; autoclaved; chicken pancreas; specified method; average and range.	.429		.407				
			.263-550		.214-58				
		Buffered; autoclaved; chicken pancreas or hog kidney; other than specified method; average and range.	.517		.417				
			.340-710		.320-5095				
	1948 Association of Official Agricultural Chemists col- laborative assay.	Chick weight method; 4 laboratories; average and range.					.37		
							.18-.55		
		Chick hematocrit method; 1 laboratory					.46		
		Chick hemoglobin method; 1 laboratory					.26		
		Buffered; autoclaved; chicken pancreas; specified method; average and range.	.3933		.4146				
			.260-490		.30-64				
		Buffered; autoclaved; chicken pancreas or other treatment; other than speci- fied method; average and range.	.35		.55				
			.163-.47		.55				
	1949 A.O.A.C. collaborative as- say.	Chick growth method; 1 laboratory					.32		
		Chick blood method; 1 laboratory					.49		
		Microbiological and chick assays				.5	Checked microbiol.		
	Special sample; 2.....	Buffered; autoclaved; chicken pancreas		.460		.355			
	do.....	do.....		.490		.400			
		Buffered; autoclaved.....	.118						
		Buffered; autoclaved; hog kidney.....	.165						
		Buffered; autoclaved; chicken pancreas	.386						
		do.....	.398		.358				
Meal						.6			

Sprouted	Fresh sprouting seeds:									
		Peking	Takadiastase-papain						.073	
		do	do						.069	
		Manchu	do						.129	
		do	do						.124	
		Mukden	do						.103	
		do	do						.137	
		Lincoln	do						.139	
		do	do						.108	
		Dunfield	do						.113	
		do	do						.109	
		Illini	do						.107	
		do	do						.097	
		Anwei	do						.088	
	do	do						.113		
Beef:	Brain	1 sample	Autolysis; 40,000 [200,000]		.052	[.0104]				
			Autolysis; 40,000 [200,000]	.011						
			Takadiastase; 40,000 [200,000]	.052						
		1 sample	Papain; 40,000 [200,000]	.045						
			Pepsin; 40,000 [200,000]	.021						
			Takadiastase-papain; 40,000 [200,000]	.052		.24	[.048]			
			Takadiastase	.013		.012				
			do	.011		.011				
			do	.016		.010				
			do	.015		.0149		.059		
			Texas market; 1	Buffered; autoclaved; chicken pancreas		.0155		.055		
			Texas market; 2	Buffered; autoclaved; chicken pancreas; average and range.		.0144-.0166				
		Hamburg	Washington, D. C., market:							
			2	Buffered; autoclaved; average and range	.0034		.0038			
3	Buffered; autoclaved; chicken pancreas; average and range.		.0033-.0035		.0036-.0039		.013			
Heart	Washington, D. C., market:									
	1 sample	Buffered; autoclaved; chicken pancreas	.0051	.014	.0049					
	2 samples; 3 specimens	Autolysis; 40,000; average [200,000]	.0042-.0062		.0043-.0054					
		Takadiastase-papain; 40,000; average [200,000]	.00375		.00506					
		40,000; range [200,000]	.056-.16							
		40,000; average [200,000]	[.0112-.032]							
Kidney	Texas A. and M. College Animal Husbandry; 4.	Buffered; autoclaved; chicken pancreas; average and range.			.0031	.013				
	1 sample	Autolysis; 40,000 [200,000]		.11	.0018-.0042					
		Takadiastase	.030	[.022]	.035					
	do	.043		.056						
	Texas A. and M. College Animal Husbandry; 2.	Buffered; autoclaved; chicken pancreas; average.			.0584	.241				
Liver:	Raw	1 sample	Autolysis; 40,000 [200,000]		.50					
					[.10]					

* Numerals used in column 2 for Reference No. 114 refer to the number of subsamples per lot or to the number of determinations of special samples.

TABLE 10.—Compiled data on the folic acid content of foods—Continued

Item (1)	Description of sample* (2)	Preliminary treatment of sample; method; potency designation of impure standard (in italics) (3)	Folic acid (mg./100 gm.)					Moist basis (7a)	Reference No. (8)	
			Microbiological assays							Other assays
			<i>S. faecalis</i>		<i>L. casei</i>		<i>S. faecalis</i> or <i>L. casei</i> or both (6a)			
			Moist basis (4a)	Moisture- free basis (4b)	Moist basis (5a)	Moisture- free basis (5b)				
Beef—Con. Liver—Continued Raw—Con.										
1 sample	Autolysis; 40,000 [200,000] Takadiastase; 40,000 [200,000] Autoclaved 30 minutes; 40,000 [200,000] .....	.25 [.05] .43 [.086] .19 [.038]							
1 sample	Autolysis 24 hours 37° C. 40,000 [200,000] Takadiastase-papain, 2 hours at 50° C., pH 4.5 40,000 [200,000] Takadiastase-papain, 2 hours 70° C., pH 4.5 40,000 [200,000] Takadiastase-papain, 4 hours at 50° C., pH 4.5 40,000 [200,000] Takadiastase-papain, 4 hours at 55° C., pH 4.5 40,000 [200,000] Takadiastase-papain, 6 hours at 55° C., pH 4.5 40,000 [200,000] Takadiastase-papain, 24 hours at 37° C., pH 4.5 40,000 [200,000] Takadiastase-papain, 48 hours at 37° C., pH 4.5 40,000 [200,000] .....	.82 [.164] .72 [.144] .69 [.138] .73 [.146] .73 [.146] .61 [.122] .88 [.176] .87 [.174]							
2 samples, 5 specimens	Takadiastase-papain; 40,000; average [200,000] 40,000; range [200,000] .....	.38 [.076] .32-.43 [.064-.086]	1.1 [.22]						
1 sample	Takadiastase-papain; 40,000 [200,000] Takadiastase; 40,000 [200,000] .....	.574 [.1148] .68-1.4 [.136-.28]							
	Takadiastase	.060		.086						
	do	.150		.105						
	do	.044		.056						
	do	.064								
	do	.097		.080						
	Takadiastase or other enzyme (abstract); chemical method.	1.44					1.57			
Texas A. and M. College Animal Husbandry; 3.	Buffered; autoclaved; chicken pancreas; average and range.			.2941 .2766-.3091	.922					
Dried 1 liver	Takadiastase; 40,000 [200,000]	4.63 [.925]								

Lung	1 sample	Autolysis; 40,000 [200,000]	.17 [.034]						130
Muscle	1 sample	Autolysis; 40,000 [200,000]	.048 [.0096]						
		Autolysis; 40,000 [200,000]	.020 [.004]						
		Takadiastase pH 3.0; 40,000 [200,000]	.031 [.0062]						
		Malt diastase pH 4.5; 40,000 [200,000]	.030 [.006]						
	1 sample	Pancreatic amylase pH 7.0; 40,000 [200,000]	.022 [.0044]						24
		Pepsin pH 1.8; 40,000 [200,000]	.010 [.002]						
		Trypsin pH 8.3; 40,000 [200,000]	.026 [.0052]						
		Pancreatin pH 8.3; 40,000 [200,000]	.019 [.0038]						
		Takadiastase; 40,000 [200,000]	.095 [.019]						117
	1 sample	Takadiastase-papain; method a, tur- bidimetric.		.044					
		Takadiastase-papain; method a, aci- dimetric.		.046					100
		Takadiastase-papain; method b, aci- dimetric.		.048					
		Water extract; mild heat; chemical method.		.025			.032		5
Rib		Takadiastase	.017	.011					103
Round:	Rib eye muscle	do.				.015			92
Raw	1 sample, 4 specimens	Takadiastase-papain; 40,000 [200,000]	.10 [.02]	.34 [.068]					25
		(No treatment	.007		.006				
		pH 4 autoclaved 12 hours	.006		.007				
	1 sample	0.1 N KOH autoclaved 1 hour	.004		.005				76
		2 N KOH autoclaved 30 minutes	.009		<.0005				
		Takadiastase	.015		.014				
		Chicken pancreas	.007		.004				
		Takadiastase	.033						
		do.	.021						103
		do.	.024						
	Washington, D. C., market; 2	Buffered; autoclaved; average and range	.0083		.0066				
		Buffered; autoclaved; chicken pancreas; average and range.	.0092	.031	.0063-.0070 .0066 .0065-.0068	.022			
	Washington, D. C., market: 3	Buffered; autoclaved; average and range	.0077 .0073-.0080		.0051 .0050-.0052				
	8	Buffered; autoclaved; chicken pancreas; average and range.	.0086 .0087-.0108	.032	.0055 .0054-.0056	.018			114
	Washington, D. C., market: 2	Buffered; autoclaved; average and range	.0043 .0038-.0049		.0044 .0033-.0055				
	3	Buffered; autoclaved; chicken pancreas; average and range.	.0074 .0066-.0079	.020	.0064 .0052-.0080	.017			
	Texas market; 4	do.			.0167 .0153-.0181	.056			

* Numerals used in column 2 for Reference No. 114 refer to the number of subsamples per lot or to the number of determinations of special samples.

TABLE 10.—Compiled data on the folic acid content of foods—Continued

Item (1)	Description of sample* (2)	Preliminary treatment of sample; method; potency designation of impure standard (in italics) (3)	Folic acid (mg./100 gm.)					Reference No. (8)	
			Microbiological assays						Other assays Moist basis (7a)
			<i>S. faecalis</i>		<i>L. casei</i>		<i>S. faecalis</i> or <i>L. casei</i> or both Moist basis (6a)		
			Moist basis (4a)	Moisture- free basis (4b)	Moist basis (5a)	Moisture- free basis (5b)			Moist basis (6a)
Beef—Con. Round—Con. Raw—Continued	Texas market; 4.....	Buffered; autoclaved; chicken pancreas; average and range.			.0142 .0115-.0180	.056		114	
		No enzyme treatment; specified method; average and range.			.0282 .013-.074				
	Dried, defatted.	1947 A.O.A.C. collaborative as- say.	Buffered; autoclaved; chicken pancreas; specified method; average and range.			.047 .018-.141			43
			No enzyme treatment; other than speci- fied method; average and range.			.026 .013-.050			
			Other treatments or other methods; average and range.			.042 .017-.097			
	Spleen.....	1 sample.....	Autolysis; 40,000..... [200,000].....	.21 [.042]				130	
	Sweetbread.....	Texas A. and M. College Ani- mal Husbandry; 2.	Buffered; autoclaved; chicken pancreas; average and range.			.0228 .0219-.0236	.105		114
		Pancreas; 1 sample.....	Autolysis; 40,000..... [200,000].....	1.6 [.32]					
		Thymus; 1 sample.....	Autolysis; 40,000..... [200,000].....	.50 [.10]				130	
	Testes.....	Bull; 1 sample.....	Autolysis; 40,000..... [200,000].....	.42 [.084]				130	
Calf; 1 sample.....		Autolysis; 40,000..... [200,000].....	.8 [.16]						
Beet: Raw.....	1 sample, 3 specimens.....	Takadiastase-papain; 40,000..... [200,000].....	.045 [.009]	.34 [.068]				25	
	1 sample.....	Takadiastase-papain; 40,000..... [200,000].....	.090 [.018]				26		
	1 sample.....	No treatment.....		.005		.005		76	
		pH 4 autoclaved 12 hours.....		.008		.003			
		0.1 N KOH autoclaved 1 hour.....		<.002		<.002			
		2N KOH autoclaved 30 minutes.....		<.002		<.002			
	High-quality sample.....	Takadiastase.....		.028		.023		120	
		Chicken pancreas.....		.008		.007			
		Takadiastase.....		.016					
	Garden or greenhouse sample.....	Hog kidney.....		.022				41	
Buffered; heated 3 minutes; hog kidney. Buffered; heated 45 minutes (abstract); chemical method.					.042	.24	.24		8

	Washington, D. C., market: 2	Buffered; autoclaved; average and range	{ .0036 .0021-. 0050		.0030 .0014-. 0045			
	2 <i>S. faecalis</i> , 3 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	{ .0177 .0169-. 0184	.121	.0150 .0126-. 0183	.103		114
	Texas market; 2	do			.0106 .0093-. 0119	.091		
	do	do			.0106 .0104-. 0109	.073		
Beet greens:								
Raw	1 sample; 5 specimens	Takadiastase-papain; 40,000 [200,000]	{ .21 [.042]	2.0 [.5]				25
	High-quality sample	Takadiastase	.017					120
	Garden or greenhouse sample	Hog kidney	.190					41
		Buffered; heated 3 minutes; hog kidney			.025	.23		8
		Buffered; heated 45 minutes (abstract); chemical method.					.366	
	Immature sample; Maryland farm: 2	Buffered; autoclaved; average and range	{ .0218 .0175-. 0261		.0258 .0225-. 0290			
	6 <i>S. faecalis</i> , 4 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	{ .0282 .0249-. 0310	.495	.0304 .0263-. 0338	.533		
	Mature from beet sample:							
	1	Buffered; autoclaved	.0202		.0135			
	2	Buffered; autoclaved; chicken pancreas; average and range.	{ .0507 .0500-. 0514	.497	.0315	.309		
	Texas market; 2	do			.0196 .0170-. 0222	.338		
	do	do			.0389 .0381-. 0396	.452		
Blackberry:								
Raw	Washington, D. C., market: 3	Buffered; autoclaved; average and range	{ .0160 .0137-. 0192		.0129 .0098-. 0173			
	5 <i>S. faecalis</i> , 3 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	{ .0165 .0131-. 0230	.101	.0188 .0136-. 0228	.115		114
	Lawton; Texas A. and M. Col- lege Farm; 2.	do			.0059 .0053-. 0064	.039		
	Early Wonder; Texas A. and M. College Farm; 2.	do			.0124 .0120-. 0127	.094		
Black-eyed peas. See Beans, cowpeas.								
Blueberry:								
Raw	Washington, D. C., market: 2	Buffered; autoclaved; average and range	{ .0030 .0028-. 0032		.0024 .0021-. 0027			
	3 <i>S. faecalis</i> , 2 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	{ .0074 .0065-. 0086	.054	.0076 .0069-. 0083	.055		
Brazil nut	Washington, D. C., market; 4	do	{ .0049 .0038-. 0053	.005	.0040 .0035-. 0046	.004		
Bread:								
Wheat	White, unenriched; 1 sample, 1 specimen	Takadiastase-papain; 40,000 [200,000]	{ .034 [.0068]	.053 [.0106]				25

* Numerals used in column 2 for Reference No. 114 refer to the number of subsamples per lot or to the number of determinations of special samples.

TABLE 10.—Compiled data on the folic acid content of foods—Continued

Item (1)	Description of sample* (2)	Preliminary treatment of sample; method; potency designation of impure standard (in italics) (3)	Folic acid (mg./100 gm.)						Reference No. (8)
			Microbiological assays					Other assays	
			<i>S. faecalis</i>		<i>L. casei</i>		<i>S. faecalis</i> or <i>L. casei</i> or both	Moist basis (7a)	
			Moist basis (4a)	Moisture- free basis (4b)	Moist basis (5a)	Moisture- free basis (5b)	Moist basis (6a)		
Bread—Con.									
Wheat—Continued									
	Whole wheat; 2 samples, 2 specimens.	Takadiastase-papain: 40,000; average [200,000] . . . . .	.069 [.0138]	.11 [.022]				25
		40,000; range [200,000] . . . . .	.052-.086 [.0104-.0172]					
	White; Washington, D. C., market; 2.	Buffered; autoclaved; chicken pancreas; average and range.	.0163 .0162-.0163	.024	.0138 .0133-.0143	.021		114	
	Vienna; Washington, D. C., market; 4.	do	.0134 .0108-.0159	.018	.0090 .0071-.0112	.012			
	Cracked wheat; Washington, D. C., market; 4 <i>S. faecalis</i> , 3 <i>L. casei</i> .	do	.0290 .0231-.0333	.042	.0250 .0240-.0260	.037			
	Dark wheat; Washington, D. C., market; 5 <i>S. faecalis</i> , 4 <i>L. casei</i> .	do	.0335 .0273-.0387	.049	.0271 .0235-.0300	.040			
Rye	Washington, D. C., market; 3 <i>S. faecalis</i> , 2 <i>L. casei</i> .	do	.0238 .0208-.0272	.037	.0157 .0155-.0159	.024			
Broccoli:									
Raw	Garden or retail sample	Water extract . . . . .	.058		.080			90
		Takadiastase . . . . .	.054		.083			
		Hog kidney . . . . .	.090		.110			41
	Garden or greenhouse sample—Washington, D. C., market: 2	Buffered; heated 3 minutes; hog kidney.	.090		.110				
	7	Buffered; autoclaved; average and range	.0080 .0075-.0085		.0140 .0120-.0160			114	
	Texas market; 2	Buffered; autoclaved; chicken pancreas; average and range.	.0333 .0268-.0415	.333	.0352 .0200-.0500	.352			
	do	do			.0236 .0210-.0262	.257			
	do	do			.0245 .0230-.0260	.258			
	Calabrese; Texas A. and M. College Farm; 2.	do			.1510 .1420-.1600	1.041			
Broccoli leaves:									
Raw	Texas market; 2.	do			.0908 .0780-.1035	.841			
Brussels sprouts:									
Raw	Washington, D. C., market: 3	Buffered; autoclaved; average and range	.0124 .0089-.0178		.0109 .0074-.0130			114	

	7	Buffered; autoclaved; chicken pancreas; average and range.	.0248 .0163-.0372 .0162	.165	.0189 .0138-.0300 .0163	.126		
	Washington, D. C., market	Buffered; autoclaved; chicken pancreas			.0338	.212		
	Texas market; 2	Buffered; autoclaved; chicken pancreas; average and range.			.0315-.0360 .0310	.200		
	Texas market; 4	do.			.0283-.0330 .0111	.092		
Buttermilk	Texas A. and M. College creamery; 3.	do.			.0061-.0137			
Cabbage:								
Raw	1 sample, 1 specimen	Takadiastase-papain; 40,000	.065	.78				25
		[200,000]	[.013]	[.156]				
	Garden or retail sample	Takadiastase	.012					90
	Col (<i>Brassica oleracea</i> L. var. <i>capitata</i>).	do.	.006	.084				50
	White; high-quality sample	do.	.009					120
		Hog kidney	.041					
		Buffered; heated 45 minutes (abstract); chemical method.	.21			.29		8
		Autolysis	0					
	Red; high-quality sample	Takadiastase	.021					120
		Hog kidney	.037					
	Washington, D. C., market:							
	2	Buffered; autoclaved; average and range	.0034 .0028-.0040		.0028 .0026-.0030			
	3	Buffered; autoclaved; chicken pancreas; average and range.	.0079	.100	.0064	.081		
	Texas market; 2	do.	.0057-.0095		.0054-.0069 .0190	.275		
	do.	do.			.0188-.0192 .0426	.501		114
	do.	do.			.0344-.0507 .0187	.253		
	Red; Texas market; 2	do.			.0186-.0188 .0171	.164		
	Wakefield; Texas A. and M. College Farm; 2.	do.			.0143-.0199 .0746	.867		
					.0614-.0878			
Cabbage, chinese or celery:								
Raw	1 assay	Takadiastase; 40,000	.20					
		[200,000]	[.04]					
		Takadiastase; rat liver; 40,000	.49					
		[200,000]	[.098]					85
	2 assays	Takadiastase; 40,000	.02, .09					
		[200,000]	[.004, .018]					
		Takadiastase; rat liver; 40,000	.14, .20					
		[200,000]	[.028, .04]					
	Washington, D. C., market:							
	1	Buffered; autoclaved	.0058		.0043			
	2	Buffered; autoclaved; chicken pancreas; average and range.	.0120 .0116-.0124	.214	.0114	.204		114
	Texas market; 3	do.			.0206 .0189-.0223	.275		
Cantaloup:								
Raw	1 sample, 3 specimens	Takadiastase-papain; 40,000	.13	1.3				25
		[200,000]	[.026]	[.26]				

* Numerals used in column 2 for Reference No. 114 refer to the number of subsamples per lot or to the number of determinations of special samples.

TABLE 10.—Compiled data on the folic acid content of foods—Continued

Item (1)	Description of sample* (2)	Preliminary treatment of sample; method; potency designation of impure standard (in italics) (3)	Folic acid (mg./100 gm.)					Moist basis (7a)	Reference No. (8)
			Microbiological assays						
			<i>S. faecalis</i>		<i>L. casei</i>		<i>S. faecalis</i> or <i>L. casei</i> or both		
			Moist basis (4a)	Moisture-free basis (4b)	Moist basis (5a)	Moisture-free basis (5b)	Moist basis (6a)		
Cantaloup—Continued Raw—Continued	Washington, D. C., market: 2 <i>S. faecalis</i> , 1 <i>L. casei</i>	Buffered; autoclaved; average and range	.0088 ----- .0080-.0096	-----	.0088 -----	-----	-----	114	
	3 <i>S. faecalis</i> , 2 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	.0087 ----- .0079-.0092	.091 -----	.0084 ----- .0072-.0096	.088 -----	-----		
	Resistant; Texas A. and M. College Farm; 4.	do.	-----	-----	.0034 ----- .0028-.0039	.047 -----	-----		
		Autolysis; 40,000 .....	.036 ----- [.0072]	-----	-----	-----	-----	
		Takadiastase; 40,000 .....	.046 ----- [.0092]	-----	-----	-----	-----	
		Papain; 40,000 .....	.026 ----- [.0052]	-----	-----	-----	-----	
		Takadiastase-papain; 40,000 .....	.051 ----- [.0102]	-----	-----	-----	-----	
		Takadiastase; papain; 40,000 .....	.059 ----- [.0118]	-----	-----	-----	-----	
		Papain; takadiastase; 40,000 .....	.036 ----- [.0072]	-----	-----	-----	-----	
		4 samples, 18 specimens	Takadiastase-papain; 40,000; average [200,000]097 ----- [.0194]	.82 [.164]	-----	-----		-----
50 Carrot: Raw		40,000; range075-.13 ----- [.015-.026]	-----	-----	-----	-----	24	
		Takadiastase; 40,000 .....	.042 ----- [.0084]	-----	-----	-----	-----	
		Takadiastase; rat liver 40,000 .....	.084 ----- [.0168]	-----	-----	-----	-----	
		Takadiastase .....	.011 -----	-----	.013 -----	-----	-----	
		Zanahoria (<i>Daucus carota</i> L.) .....	.008 -----	.097 -----	-----	-----	-----	
		do. ....	.008 -----	-----	-----	-----	-----	
		High-quality sample	Hog kidney024 -----	-----	-----	-----		120
		do.	Buffered; heated 45 minutes (abstract); chemical method.	.12 -----	-----	-----	.13 -----		
		do.	Water extract; mild heat; chemical method.	-----	-----	.040 -----	.054 -----		8
		Washington, D. C., market: 2	Buffered; autoclaved; average and range	.0015 ----- .0013-.0017	-----	.0020 ----- .0020-.0021	-----		-----	5
	3 <i>S. faecalis</i> , 2 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	.0072 ----- .0064-.0089	.055 -----	.0076 -----	.058 -----	-----		

Canned	Washington, D. C., market; 4	Buffered; autoclaved; average and range	.0033 .0032-.0034		.0034 .0033-.0034			
		Buffered; autoclaved; chicken pancreas; average and range.	.0059 .0056-.0063	.044	.0054 .0046-.0060	.041		
	Washington, D. C., market: 3	Buffered; autoclaved; average and range	.0044 .0042-.0049		.0040 .0039-.0041			114
	4	Buffered; autoclaved; chicken pancreas; average and range.	.0068 .0062-.0073	.059	.0069 .0064-.0074	.060		
	Texas market; 2	do.			.0156 .0130-.0182	.154		
	do.	do.			.0062 .0051-.0073	.053		
	do.	do.			.0101 .0085-.0117	.077		
	Solid and liquid; 10 samples, 60 cans.	Takadiastase; average and range	.0013 .0010-.0022		.0041 .0022-.0057			59
	Solid and liquid; 2 samples, 2 cans.	Takadiastase; average				.0024		
	Stored 4 months at 70° F.	do.				.006		17
Stored 4 months at 90° F.	do.				.005			
Stored 4 months at 100° F.	do.				.005			
Cassava:								
Raw	<i>Manihot esculenta</i> , Crantz, Cuban market.	Buffered; autoclaved; takadiastase; chicken pancreas.			.00004			10
Cauliflower:								
Raw	2 samples, 2 specimens	Takadiastase-papain; 40,000; average [200,000] range 40,000; [200,000]	.14 [.028] .11-.16 [.022-.032]	1.2 [.24]				25
	Garden or retail sample	Water extract	.006		.051			
		Acid hydrolysis	.020		.026			
		Alkaline hydrolysis	.006		.022			
		Takadiastase	.010		.045			
	do.	Water extract	.010		.057			90
		Acid hydrolysis	.015		.021			
		Alkaline hydrolysis	.008		.024			
		Takadiastase	.017		.062			
	do.	Water extract	.009		.050			
		Acid hydrolysis	.022		.041			
		Alkaline hydrolysis	.008		.057			
		Takadiastase	.024		.070			
	Coliflor (<i>Brassica oleracea</i> L. var. <i>botrytis</i>).	do.	.016	.139				50
	High-quality sample	do.	.012					120
		Hog kidney	.032					
		Buffered; heated 3 minutes; autolysis pH 4.5.	.026					
		Buffered; heated 3 minutes; takadiastase.	.026					
	1 sample	Buffered; heated 3 minutes; Rhozyme P-11.	.015					91
		Buffered; heated 3 minutes; Protease 15	.017					
		Buffered; heated 3 minutes; hog kidney	.087					
		Buffered; heated 3 minutes; takadiastase; hog kidney.	.095					
		Buffered; heated 3 minutes; Rhozyme; hog kidney.	.039					

* Numerals used in column 2 for Reference No. 114 refer to the number of subsamples per lot or to the number of determinations of special samples.

TABLE 10.—Compiled data on the folic acid content of foods—Continued

(1)	(2)	(3)	Folic acid (mg., 100 gm.)					(7a)	(8)	
			Microbiological assays							
			<i>S. faecalis</i>		<i>L. casei</i>		<i>S. faecalis</i> or <i>L. casei</i> or both			
			Moist basis (4a)	Moisture-free basis (4b)	Moist basis (5a)	Moisture-free basis (5b)	Moist basis (6a)			
Cauliflower— Raw—Continued	Continued								Reference No.	
	1 sample—Continued.	Buffered; heated 3 minutes; Protease; hog kidney.	.052							91
	Garden or greenhouse sample.	Buffered; heated 3 minutes; hog kidney.	.044							41
		Buffered; heated 45 minutes (abstract); chemical method.						.396		8
	Washington, D. C., market:									
	1	Buffered; autoclaved.	.0070		.0100					
	2	Buffered; autoclaved; chicken pancreas; average and range.	.0128	.152	.0172	.205				
			.0103-.0152		.0145-.0200					
	Texas market; 2	do			.0291	.323				114
	do	do			.0247-.0335					
				.0299	.325					
				.0293-.0305						
Celery: Raw	White, high-quality sample	Takadiastase	.004						120	
		Hog kidney	.024							
	Pascal; high-quality sample	Takadiastase	.003							
		Hog kidney	.029							
	Washington, D. C., market:									
	1	Buffered; autoclaved.	.0024		.0027					
	2	Buffered; autoclaved; chicken pancreas; average and range.	.0078	.159	.0085	.173				
			.0069-.0087		.0079-.0092					
	Washington, D. C., market	Buffered; autoclaved; chicken pancreas	.00715		.00665					
	Texas market; 2	Buffered; autoclaved; chicken pancreas; average and range.			.0052	.096				
	do			.0043-.0061						
				.0074	.164					
				.0059-.0088						
Celery greens: Raw		Buffered; heated 45 minutes (abstract); chemical method.					.30	8		
Chard: Raw	1 sample	Takadiastase; 40,000	.38						85	
		[200,000]	[.076]							
		Takadiastase; rat liver 40,000	.42							
		[200,000]	[.084]							
		Water extract	.071		.076					
	Garden or retail sample	Takadiastase	.086		.087					
		Hog kidney	.123		.123					
3 samples	Takadiastase; average and range	.100		.111						
		.086-.125		.087-.142						
Garden or retail sample	Takadiastase		1.15		1.30			90		
Stored 3 days at room temperature.	do		.50		.35					

Stored 15 days in refrigerator	do	.55		.50		50
Stored 15 days iced	do	1.25		1.30		
Acelgas (<i>Beta vulgaris</i> L.)	do	.024	.298			
1 sample	Buffered; heated 3 minutes; incubated pH 4.5.	.027				91
	Buffered; heated 3 minutes; takadiastase.	.025				
	Buffered; heated 3 minutes; hog kidney.	.080				
	Autolyzed in water	.050				
	Incubated pH 4.5	.061				
	Takadiastase	.060				
High-quality sample	Takadiastase (corrected for conjugate content of takadiastase).	(.054)				120
	Hog kidney	.079				
	Hog kidney	.011				
Garden or greenhouse: 5 <i>S. faecalis</i> , and 6 <i>L. casei</i> samples.	Buffered; heated 3 minutes; hog kidney; average and range.	.070	.62	.062	.53	41
		.044-.125	.32-1.00	.040-.125	.32-1.00	
Garden or greenhouse sample	Buffered; heated 3 minutes; hog kidney		.730		.570	41
Stored in a wax bag:						
1 day at room temperature	do		.740		.600	
2 days at room temperature	do		.830		.800	
3 days at room temperature	do		.630		.460	
1 week in refrigerator	do		.840		.610	
2 weeks in refrigerator	do		.700		.640	
1 week in crushed ice	do		.950		.770	
2 weeks in crushed ice	do		.970		1.000	
Garden or greenhouse sample	do		.390		.360	
Stored in a wax bag:						
1 day at room temperature	do		.320		.320	
2 days at room temperature	do		.280		.220	
1 week in refrigerator	do		.480		.420	
2 weeks in refrigerator	do		.320		.330	
1 week in crushed ice	do		.500		.430	
2 weeks in crushed ice	do		.350		.350	
Garden or greenhouse sample	do		1.000		1.000	
Stored in a wax bag:						
3 days at room temperature	do		.480		.740	
2 weeks in refrigerator	do		.540		.650	
2 weeks in crushed ice	do		1.200		1.300	
Washington, D. C., market:						
1	Buffered; autoclaved	.0049		.0048		114
3	Buffered; autoclaved; chicken pancreas; average and range.	.0300	.600	.0318	.636	
		.0290-.0313		.0264-.0350		
Lucullus; Texas A. and M. College Farm; 3.	do			.0639	.900	
Lucullus; Texas A. and M. College Farm; 2.	do			.0606-.0691		
				.0422	.410	
Cheese: Cheddar	1 sample	Takadiastase-papain; 40,000	.030	.045		25
		[200,000]	[.006]	[.009]		
	1 sample	Takadiastase	.005			90
Texas market; 2	Buffered; autoclaved; chicken pancreas; average and range.			.0196	.029	
New York State; 4				.0167-.0225		114
			.0146	.022	.0124		.019
			.0137-.0150		.0122-.0126	

* Numerals used in column 2 for Reference No. 114 refer to the number of subsamples per lot or to the number of determinations of special samples.

TABLE 10.—Compiled data on the folic acid content of foods—Continued

Item	Description of sample*	Preliminary treatment of sample; method; potency designation of impure standard (in italics)	Folic acid (mg./100 gm.)						Reference No.
			Microbiological assays					Other assays	
			<i>S. faecalis</i>		<i>L. casei</i>		<i>S. faecalis</i> or <i>L. casei</i> or both	Moist basis	
			Moist basis	Moisture-free basis	Moist basis	Moisture-free basis	Moist basis		
(1)	(2)	(3)	(4a)	(4b)	(5a)	(5b)	(6a)	(7a)	(8)
Cheese—Con. Cottage	Texas A. and M. College Creamery; 3.	Buffered; autoclaved; chicken pancreas; average and range.	-----		.0208	.091	-----	-----	114
	Washington, D. C., market; 4	do	-----		.0169-.0242	-----	-----	-----	
Processed	Composite, 5 <i>S. faecalis</i> , 4 <i>L. casei</i> .	do	-----		.0265	.097	-----	-----	
			-----		.0443-.0517	.171	.0253-.0287	-----	
			-----		.0116	.018	.0106	.016	
Cherry: Raw	Bing; Texas market; 3	do	-----		.0094-.0127	-----	-----	-----	
	Washington, D. C., market; 2	Buffered; autoclaved; average and range	-----		.0052	.028	-----	-----	
-----			.0044-.0069	-----	-----	-----			
Chicken: Breast	2 samples, 2 specimens	Buffered; autoclaved; chicken pancreas; average and range.	-----		.0034	-----	-----	-----	
			-----		.0023-.0027	.037	.0031-.0036	.033	
Heart	Old hen	Autolysis; 40,000 [200,000]	-----		.0076	-----	-----	-----	
			-----		.0073-.0078	-----	.0061-.0073	-----	
Kidney	1 sample	No treatment	-----		.15	.60	-----	-----	
			-----		[.03]	[.12]	-----	-----	
Leg	2 samples, 4 specimens	Takadiastase-papain; 40,000; average [200,000]	-----		.098-.20	-----	-----	-----	
			-----		[.0196-.04]	-----	-----	.005	
Liver	Old hen; 1 sample	Autolysis; 40,000 [200,000]	-----		.25	.25	-----	-----	
			-----		[.05]	[.05]	-----	-----	
Kidney	1 sample	Averaged results from digestion with takadiastase and digestion with hog kidney; average and range.	-----		.021	-----	-----	-----	
			-----		.019-.023	-----	-----	-----	
Kidney	1 sample	pH 4 autoclaved	-----		.047	.043	-----	-----	
			-----		.047	.044	-----	-----	
Kidney	1 sample	0.1 N KOH autoclaved 1 hour	-----		<.005	<.005	-----	-----	
			-----		.034	.040	-----	-----	
Kidney	1 sample	Takadiastase	-----		.26	.12	-----	-----	
			-----		.049	.045	-----	-----	
Kidney	1 sample	Chicken pancreas	-----		.16	-----	-----	-----	
			-----		.10-.22	-----	-----	-----	
Leg	2 samples, 4 specimens	Averaged results from digestion with takadiastase and digestion with hog kidney; average and range.	-----		.12	.54	-----	-----	
			-----		[.024]	[.108]	-----	-----	
Leg	2 samples, 4 specimens	Takadiastase-papain; 40,000; average [200,000]	-----		.095-.15	-----	-----	-----	
			-----		[.019-.03]	-----	-----	.005	
Liver	Old hen; 1 sample	Autolysis; 40,000 [200,000]	-----		1.2	-----	-----	-----	
			-----		[.24]	[.24]	-----	-----	

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do	do	40,000 [200,000]	2.4 [.48]			10-.35	46
White leghorn; 8-13 weeks old; early diet deficient.	Buffered; pH 7.0; incubated	.616					31
do	do	.974					
do	do	.164					
do	do	.428					
do	do	.016					
do	do	.512					
do	do	.458					
do	do	.792					76
1 sample	No treatment	.14	.17				
	Autolysis	.21	.23				
	pH 4 autoclaved 12 hours	.16	.21				
	0.1 N KOH autoclaved 1 hour	<.04	.06				
	2 N KOH autoclaved 30 minutes	.07	.13				
	Takadiastase	.42	.38				
	Chicken pancreas	.30	.26				
White leghorns; 4 weeks old; PGA deficient basal ration; Basal ration; 6 chicks	Takadiastase; average and range	.107 .079-.152					87
Basal ration+0.25 mg. PGA per kg. ration; 5 chicks.	do	.235					
Basal ration+1.000 mg. PGA per kg. ration; 6 chicks.	do	.146-.308					
Basal ration+10.0 mg. PGA per kg. ration; 6 chicks.	do	.352					
do	do	.197-.451					
do	do	1.47					
do	do	1.19-1.64					
do	do	.10					
do	do	.04-.21					
do	do	.39					
do	do	.36-.43					
White leghorns; 4-5 weeks old; PGA deficient basal ration+ 2.00 mg. PGA per kg. ration.	Averaged results from digestion with takadiastase and digestion with hog kidney; average and range.	.305 .18-.43					47
3-4-week-old chicks on purified diet with and without PGA supplement.	No treatment; range					.07-.19	
	Autolysis; range					.80-1.21	
	Chicken pancreas; range					1.13-1.40	
White leghorn chickens:							115
Basal diet; 12 chicks	Autolysis pH 4.5	.20					
	Autolysis pH 7.0	.15					
	Hog kidney	.21					
	Chicken pancreas	.19					
	Autolysis pH 4.5	.13					
Basal diet+0.05 mg. PGA per kg. diet; 4 chicks.	Autolysis pH 7.0	.15					
	Hog kidney	.11					
	Chicken pancreas	.15					
	Autolysis pH 4.5	.13					
	Autolysis pH 7.0	.20					
Basal diet+0.10 mg. PGA per kg. diet; 8 chicks.	Hog kidney	.25					
	Chicken pancreas	.31					
	Autolysis pH 4.5	.22					
	Autolysis pH 7.0	.22					
	Hog kidney	.32					
Basal diet+0.20 mg. PGA per kg. diet; 7 chicks.	Chicken pancreas	.30					

* Numerals used in column 2 for Reference No. 114 refer to the number of subsamples per lot or to the number of determinations of special samples.

TABLE 10.—Compiled data on the folic acid content of foods—Continued

Item (1)	Description of sample* (2)	Preliminary treatment of sample; method; potency designation of impure standard (in italics) (3)	Folic acid (mg./100 gm.)					Moist basis (7a)	Reference No. (8)	
			Microbiological assays							Other assays
			<i>S. faecalis</i>		<i>L. casei</i>		<i>S. faecalis</i> or <i>L. casei</i> or both			
			Moist basis (4a)	Moisture- free basis (4b)	Moist basis (5a)	Moisture- free basis (5b)					Moist basis (6a)
Chicken—Con. Liver—Continued	White leghorn chickens—Con.									
	Basal diet+0.40 mg. PGA per kg. diet; 9 chicks.	Autolysis pH 4.5 Autolysis pH 7.0 Hog kidney..... Chicken pancreas.....	.29 .23 .29 .32							
	Basal diet+0.80 mg. PGA per kg. diet; 9 chicks.	Autolysis pH 4.5 Autolysis pH 7.0 Hog kidney..... Chicken pancreas.....	.85 .87 .99 .86							
	Basal diet+2.00 gm. PGA per kg. diet; 9 chicks.	Autolysis pH 4.5 Autolysis pH 7.0 Hog kidney..... Chicken pancreas.....	.50 .51 .60 .63							
	Basal diet+10.00 mg. PGA per kg. diet; 8 chicks.	Autolysis pH 4.5 Autolysis pH 7.0 Hog kidney..... Chicken pancreas.....	.77 .73 .78 .89							
	Commercial feed contained 1.75 mg. PGA per kg.; 8 chicks.	Autolysis pH 4.5 Autolysis pH 7.0 Hog kidney..... Chicken pancreas.....	.67 .53 .73 .71							
	White leghorn pullets; 4 chicks each:									
	Basal diet contained 0.008 mg. PGA per kg.	Incubated pH 4.5.....	.20							
	Basal diet+0.25 mg. PGA per kg. diet.	.....do.....	.18						
	Basal diet+0.5 mg. PGA per kg. diet.	.....do.....	.25						
	Basal diet+0.75 mg. PGA per kg. diet.	.....do.....	.36						
	Basal diet+1.0 mg. PGA per kg. diet.	.....do.....	.32						
	Basal diet+1.25 mg. PGA per kg. diet.	.....do.....	.47						
	Basal diet+1.50 mg. PGA per kg. diet.	.....do.....	.33						
	Basal diet+2.0 mg. PGA per kg. diet.do.....	.47							
	Basal diet+3.0 mg. PGA per kg. diet.do.....	.42							
	Practical feed.....do.....	.24							

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White leghorn; 4 weeks old; germ-free chicks; 5 samples.	Takadiastase-papain; average and range			.21					97
White leghorn; 4 weeks old; control chicks; 5 samples.	do.			.10-.30					
4 weeks old; control diet (PGA deficient ration+0.50 mg. PGA per kg.):				.19					
Control diet; 12 chicks.	Autolysis pH 4.5 18-20 hours 37° C.	.117							97
Control diet+vitamin B ₁₂ ; 12 chicks.	do.	.104							
Control diet+vitamin C; 12 chicks.	do.	.242							
Control diet+sulfasuxidine; 12 chicks.	do.	.138							
Control diet+sulfasuxidine+vitamin B ₁₂ ; 12 chicks.	do.	.169							
Control diet+sulfasuxidine+vitamin C; 12 chicks.	do.	.134							
4 weeks old; ration I (PGA deficient ration with other B vitamins increased):									
Ration I; 12 chicks.	Autolysis pH 4.5 18-20 hours 37° C.	.109							
Ration I+vitamin B ₁₂ ; 12 chicks.	do.	.079							
Ration I+vitamin C; 12 chicks.	do.	.148							
Ration I+sulfasuxidine; 12 chicks.	do.	.101							
Ration I+sulfasuxidine+vitamin B ₁₂ ; 12 chicks.	do.	.074							
Ration I+sulfasuxidine+vitamin C; 12 chicks.	do.	.164							
Ration I+0.50 mg. PGA per kg. ration; 12 chicks.	do.	.117							
Ration I+0.50 mg. PGA per kg. ration+vitamin B ₁₂ ; 12 chicks.	do.	.118							
Ration I+0.50 mg. PGA per kg. ration+vitamin C; 12 chicks.	do.	.195							
Ration I+0.50 mg. PGA per kg. ration+sulfasuxidine; 12 chicks.	do.	.156							
Ration I+0.50 mg. PGA per kg. ration+sulfasuxidine+vitamin B ₁₂ ; 12 chicks.	do.	.213							
Ration I+0.50 mg. PGA per kg. ration+sulfasuxidine+vitamin C; 12 chicks.	do.	.120							
4 weeks old; PGA deficient ration; 10 chicks.	do.	.098							
4 weeks old; PGA deficient ration+0.020 mg. PGA injected; 10 chicks.	do.	.231							
4 weeks old; PGA deficient ration+25 mg. vitamin C injected; 10 chicks.	do.	.127							
Texas market; 2	Buffered; autoclaved; chicken pancreas			.3770		1.351			114

* Numerals used in column 2 for Reference No. 114 refer to the number of subsamples per lot or to the number of determinations of special samples.

TABLE 10.—Compiled data on the folic acid content of foods—Continued

Item (1)	Description of sample* (2)	Preliminary treatment of sample; method; potency designation of impure standard (in italics) (3)	Folic acid (mg./100 mg.)						Reference No. (8)
			Microbiological assays					Other assays Moist basis (7a)	
			<i>S. faecalis</i>		<i>L. casei</i>		<i>S. faecalis</i> or <i>L. casei</i> or both Moist basis (6a)		
			Moist basis (4a)	Moisture- free basis (4b)	Moist basis (5a)	Moisture- free basis (5b)			
Chicken—Con. Muscle.....	White leghorn; 4 weeks old; PGA deficient basal ration: Basal ration; 6 chicks.....	Takadiastase; average and range.....	.005 .0042-.0069					87	
	Basal ration+0.25 mg. PGA per kg. ration; 5 chicks.	do.....	.006 .004-.007						
	Basal ration+1.00 mg. PGA kg. ration; 6 chicks.	do.....	.006 .005-.008						
	Basal ration+10.00 mg. PGA per kg. ration; 6 chicks.	do.....	.004 .003-.005						
	White leghorn; 5 weeks on PGA deficient basal ration: Basal ration.....	do.....	.009 .005-.013						
	Basal ration+2.00 mg. PGA per kg. ration.	do.....	.007						
	White leghorn; 4-5 weeks old, on PGA deficient basal ration+ 2.0 mg. PGA per kg. ration; 6 samples (2 each).	Averaged results from digestion with takadiastase and digestion with hog kidney; average and range.	.008 .004-.012						
	Dark meat; Texas market; 2	Buffered; autoclaved; chicken pancreas; average and range.			.0028 .0022-.0034	.013			114
	White meat; Texas market; 3	do.....			.0031 .0026-.0035	.014			
	Skin.....	White leghorn; 4-5 weeks old; PGA deficient basal ration+ 2.0 mg. PGA per kg. ration; 6 samples (2 each).	Averaged results from digestion with takadiastase and digestion with hog kidney; average and range.	.005 .005-.006					
Chicory: Raw.....	Washington, D. C., market: 2.....	Buffered; autoclaved; average and range	.0044 .0037-.0050		.0053 .0042-.0063			114	
	3.....	Buffered; autoclaved; chicken pancreas; average and range.	.0316 .0271-.0354	.632	.0280 .0236-.0304	.560			
Chinese cab- bage. See Cabbage, chinese.									
Chocolate.....	1 sample, 1 pound.....	Takadiastase-papain; 40,000 [200,000].....	.099 [.0198]	.100 [.02]				25	

Coconut:									
Meat	Texas market; 5	Buffered; autoclaved; chicken pancreas; average and range.			.0276	.045			114
Dried meat	<i>Cocos nucifera</i> L.	Rat growth method			.0138-.0423			.05	11
Milk							1.0003		118
Codfish:									
Canned, strained							.015		7
Coffee:									
Toasted grain	<i>Coffea arabica</i> L.; Cuban market.	Buffered; autoclaved; takadiastase; chicken pancreas.			0				10
Collard:									
Raw	Texas A. and M. College Farm; 3.	Buffered; autoclaved; chicken pancreas; average and range.			.1018	.960			114
Coriander:									
Raw	Cilantro (<i>Coriandrum sativum</i> L.)	Takadiastase	.007	.050					50
Corn:									
Raw	Elote (<i>Zea mays</i> L.)	Takadiastase	.019	.052					120
	Golden; high-quality sample	do	.067						
	Washington, D. C., market	Hog kidney	.070						
	Washington, D. C., market: 2	Buffered; autoclaved; chicken pancreas	.0138		.0184				
	3 <i>S. faecalis</i> , 2 <i>L. casei</i>	Buffered; autoclaved; average and range	.0051		.0051				
			.0038-.0063		.0047-.0054				
		Buffered; autoclaved; chicken pancreas; average and range.	.0135	.059	.0093	.041			
		do	.0124-.0144						
	Aristogold; Texas A. and M. College Farm; 2.	do			.0133	.054			
	Golden Bantam; Texas market; 3.	do			.0131-.0135				
		do			.0699	.268			
	Honey June; Texas A. and M. College Farm; 2.	do			.0653-.0775				
		do			.0671	.359			
	Yellow Field Hybrid; Texas market; 4.	do			.0652-.0690				114
		do			.0234	.102			
	Golden Bantam; Texas market; 2.	do			.0188-.0270				
		do			.0083	.039			
	Golden Bantam; Texas A. and M. College Farm; 2.	do			.0074-.0092				
		do			.0193	.054			
	Golden Cross Bantam; Texas A. and M. College Farm; 2.	do			.0167-.0219				
		do			.0284	.133			
	Ioana; Texas A. and M. College Farm; 2.	do			.0266-.0301				
		do			.0131	.059			
	Tendermost; Texas A. and M. College Farm; 3.	do			.0129-.0132				
		do			.0243	.148			
		do			.0153-.0325				
Canned	Yellow; solid and liquid; 10 samples, 60 cans.	Takadiastase; average and range	.0017	.0056					59
			.0013-.0024		.0033-.0069				
Dry seed		Takadiastase-papain; 3, 100 [200, 000]		1.00					20
				[.0155]					
	Maíz U (<i>Zea Mays</i> L.)	Takadiastase	.031			.034			50
	Maíz Gto. 20 (<i>Zea Mays</i> L.)	do	.035			.038			
		Buffered; heated 3 minutes; hog kidney; method a.	.023			.022			
	Ground	Buffered; heated 3 minutes; hog kidney; method b.				.017			91

* Numerals used in column 2 for Reference No. 114 refer to the number of subsamples per lot or to the number of determinations of special samples. ¹ mg. per 100 ml.

TABLE 10.—Compiled data on the folic acid content of foods—Continued

Item (1)	Description of sample* (2)	Preliminary treatment of sample; method; potency designation of impure standard (in italics) (3)	Folic acid (mg./100 gm.)					Reference No. (8)	
			Microbiological assays						Other assays (7a)
			<i>S. faecalis</i>		<i>L. casei</i>		<i>S. faecalis</i> or <i>L. casei</i> or both (6a)		
			Moist basis (4a)	Moisture- free basis (4b)	Moist basis (5a)	Moisture- free basis (5b)			Moist basis (7a)
Corn—Continued	continued								
Dry seed—C	Feedstuff; 4 tests.....	Chick growth; average and range.....					{ .03 .008-.06 } 75		
	Yellow; feedstuff; 7 <i>S. faecalis</i> , 6 <i>L. casei</i> samples. 1948 crop; composite U. S. sample: 2 <i>S. faecalis</i> , 3 <i>L. casei</i>	Buffered; autoclaved; hog kidney; aver- age and range.	{ .029 .022-.044		.023 .021-.029			} 41	
	4 <i>S. faecalis</i> , 5 <i>L. casei</i>	Buffered; autoclaved; average and range	{ .0055 .0044-.0065		.0045 .0037-.0051			} 114	
Breakfast cereal.....	1 sample.....	Buffered; autoclaved; chicken pancreas; average and range.	{ .0238 .0188-.0308	.027	.0234 .0130-.0365	.026		} 114	
	1 sample.....	Buffered; autoclaved; takadiastase.....	.006					90	
		Buffered; heated 3 minutes; hog kid- ney; method a.	.009		.009			91	
		Buffered; heated 3 minutes; hog kid- ney; method b.			.005			91	
	5 samples.....	Buffered; autoclaved; hog kidney; average and range.	{ .009 .006-.012		.009 .007-.013			} 41	
	Washington, D. C., market: 1 <i>S. faecalis</i> , 2 <i>L. casei</i>	Buffered; autoclaved; average and range	.0033		.0022 .0019-.0025			114	
	2 <i>S. faecalis</i> , 3 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	{ .0061 .0045-.0076	.006	.0050 .0033-.0070	.005		114	
	Corn and soy; Washington, D. C., market: 3 <i>S. faecalis</i> , 2 <i>L. casei</i>	Buffered; autoclaved; average and range	{ .0114 .0090-.0127		.0171 .0135-.0207			114	
	4.....	Buffered; autoclaved; chicken pancreas; average and range.	{ .0987 .0915-.1071	.101	.0616 .0510-.0700	.063		114	
Hominy grits	1 sample, 1 pound.....	Takadiastase-papain; 40,000.....	.010	.011				25	
	Washington, D. C., market: 2.....	Takadiastase-papain; [200,000].....	[.002]	[.0022]				25	
	2.....	Buffered; autoclaved; average and range	{ .0029 .0024-.0034		.0021 .0018-.0024			114	
	6 <i>S. faecalis</i> , 8 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	{ .0045 .0040-.0049	.005	.0038 .0025-.0065	.004		114	
Meal.....	2 samples.....		Trace					61	
White.....	1 sample, 1 pound.....	Takadiastase-papain; 40,000.....	.020	.023				25	
	Washington, D. C., market: 3 <i>S. faecalis</i> , 2 <i>L. casei</i>	Takadiastase-papain; [200,000].....	[.004]	[.0046]				25	
	2.....	Buffered; autoclaved; average and range	{ .0023 .0016-.0030		.0016			114	

Yellow	4	Buffered; autoclaved; chicken pancreas; average and range.	{ .0100 .0084-.0117	.011	.0067 .0064-.0068	.007		10
	Zea mays L.; Cuban market	Buffered; autoclaved; takadiastase; chicken pancreas.			0			
	do	do			0			
	do	do			0			
Sprouted, dehydrated	Washington, D. C., market: 2 S. faecalis, 4 L. casei	Buffered; autoclaved; average and range	{ .0031 .0029-.0033 .0101		.0028 .0019-.0035 .0064			114
	4	Buffered; autoclaved; chicken pancreas; average and range.	{ .0076-.0116	.011	.0055-.0073	.007		
Cowpea. See Bean and bean products, cowpea.	Seed, shoot, and root	Takadiastase-papain; 3, 100 [200,000]		4.50 [.0697]				20
Cranberry: Raw	Washington, D. C., market:							114
	1	Buffered; autoclaved	.0010		.0001			
Cucumber: Raw	2	Buffered; autoclaved; chicken pancreas; average and range.	{ .0027 .0026-.0027	.021	.0017 .0015-.0018	.013		90
	Garden or retail sample	Water extract	.0023		.0026			
		Takadiastase	.0050		.0067			
		Hog kidney	.0065		.0125			
Custard apple, bullock's-heart: Raw	Washington, D. C., market:							114
	3	Buffered; autoclaved; average and range	{ .0039 .0028-.0046		.0037 .0026-.0044			
	2	Buffered; autoclaved; chicken pancreas; average and range.	{ .0076 .0073-.0079	.181	.0087 .0085-.0088	.207		
	Straight Eight; Texas market; 2	do			.0079 .0076-.0081	.188		
Date	Texas market; 2	do			.0035 .0029-.0040	.097		11
	Annona reticulata L.	Rat growth method					<.02	
Dewberry: Raw	Washington, D. C., market:							114
	2	Buffered; autoclaved; average and range	{ .0089 .0071-.0106		.0110 .0103-.0116			
Dock: Raw	4	Buffered; autoclaved; chicken pancreas; average and range.	{ .0245 .0232-.0265	.030	.0249 .0205-.0290	.030		50
	Regal Ness; Texas A. and M. College Farm; 2	do			.0308 .0308-.0308	.208		
	Earli Ness; Texas A. and M. College Farm; 2	do			.0276 .0270-.0283	.224		
	Texas market; 2	do			.0200 .0193-.0206	.132		
	Lengua de vaca (Rumex Sp.)	Takadiastase	.031	.383				

* Numerals used in column 2 for Reference No. 114 refer to the number of subsamples per lot or to the number of determinations of special samples.

TABLE 10.—Compiled data on the folic acid content of foods—Continued

Item (1)	Description of sample* (2)	Preliminary treatment of sample; method; potency designation of impure standard (in italics) (3)	Folic acid (mg./100 gm.)					Reference No. (8)	
			Microbiological assays				Other assays		
			<i>S. faecalis</i>		<i>L. casei</i>		<i>S. faecalis</i> or <i>L. casei</i> or both		Moist basis (7a)
			Moist basis (4a)	Moisture- free basis (4b)	Moist basis (5a)	Moisture- free basis (5b)	Moist basis (6a)		
Egg: Chicken	2 samples, 12 eggs	Takadiastase-papain; <i>40,000</i> ; average [200,000]	.086 [.0172]	.33 [.066]				25	
		<i>40,000</i> ; range [200,000]	.076-.095 [.0152-.019]						
	1 sample	Takadiastase-papain; <i>40,000</i> [200,000]	.110 [.022]					26	
	White leghorn pullets:								
	Basal diet 1 month	Takadiastase	.0067					102	
	Basal diet 2 months	do	.012						
	Supplemented diet 1 month	do	.0064						
	Supplemented diet 2 months	do	.020						
	Basal diet 1½ months	do	.008						
	Basal diet 2½ months	do	.009						
	Basal diet 3½ months	do	.008						
	Basal diet 4½ months	do	.015						
	Basal diet 5½ months	do	.008						
	Basal diet 6½ months	do	.011						
	Basal diet 7½ months	do	.011						
	Supplemented diet 1½ months	do	.011						
	Supplemented diet 2½ months	do	.016						
	Supplemented diet 3½ months	do	.012						
	Supplemented diet 4½ months	do	.017						
	Supplemented diet 5½ months	do	.012						
	Supplemented diet 6½ months	do	.013						
	Supplemented diet 7½ months	do	.014						
	1 sample, 48 eggs	Hog kidney	.027					52	
	do	do	.013						
	do	do	.018						
	do	do	.021						
	do	do	.017						
	do	do	.015						
	do	do	.018						
	1 sample	Chicken pancreas	.0020					107	
		Hog kidney	.0033						
		Chicken pancreas; hog kidney	.0030						
		Chicken pancreas	.0063						
	1 sample	Hog kidney	.0065					114	
		Chicken pancreas; hog kidney	.0060						
	Agricultural Research Center; 6.	Buffered; autoclaved; chicken pancreas; average and range.	.0046 {.0041-.0050	.018	.0032 .0019-.0059	.013			
	Texas market; 3.	do			.0075 {.0065-.0081	.028			

Turkey	Broad-breasted Bronze hens:									
	Low PGA diet; 20 eggs	Takadiastase	.0113							
	Supplemented PGA diet; 26 eggs.	do	.0195							
	Standard ration; 13 eggs	do	.0171							
	Basal diet 1½ months	do	.013							
	Basal diet 2½ months	do	.009							
	Basal diet 3½ months	do	.009							
	Basal diet 4½ months	do	.016							
	Basal diet 5½ months	do	.016							
	Basal diet 6½ months	do	.006							
	Supplemented diet 1½ months	do	.019							
	Supplemented diet 2½ months	do	.015							
	Supplemented diet 3½ months	do	.012							
	Supplemented diet 4½ months	do	.030							
Supplemented diet 5½ months	do	.030								
Supplemented diet 6½ months	do	.018								
Egg white: Chicken	Fluid albumen from egg whites:									
	"High" albumen quality; 25 samples.	Heated 1 minute; pepsin; takadiastase; trypsin.	.00150	.0112						
	"Low" albumen quality; 25 samples.	do	.001485	.0125						
	Above fluid albumen samples.	Average	.00149	.0118						
	Above fluid albumen×21.6 (conjugase factor).	(Hog kidney used for determining conjugase factor).	.03218	.2549						
	Firm albumen from egg whites:									
	"High" albumen quality; 24 samples.	Heated 1 minute; pepsin; takadiastase; trypsin.	.00164	.0131						
	"Low" albumen quality; 26 samples.	do	.00140	.0118						
	Above firm albumen samples	Average	.00152	.0120						
	Above firm albumen×30.2 (conjugase factor).	(Hog kidney used for determining conjugase factor).	.04590	.3624						
Agricultural Research Center; 7.		Hog kidney	(²)							
	Buffered; autoclaved; chicken pancreas; average and range.	{	.0007	.006	.0004	.003				
Turkey	Low PGA diet	Takadiastase	.0007							
	Supplemented diet	do	.0013							
Egg yolk: Chicken	Yolk from eggs with "high" albumen quality; 21 samples.	Heated 1 minute; pepsin; takadiastase; trypsin; ether extraction.	.02246	.0424						
	Yolk from eggs with "low" albumen quality; 23 samples.	do	.02272	.0430						
	Above yolk from "high" and "low" albumen quality eggs.	Average	.02259	.0427						
	Above egg yolks×3.2 (conjugase factor).	(Hog kidney used for determining conjugase factor).	.07229	.1366						
	Single comb white leghorns; practical rations; 7 assays.		Autoclaved; incubated; average		.0102					
			Incubated; average		.0319					
			Autoclaved; chicken pancreas; average		.0353					
			Chicken pancreas; average		.0814					
	Prior to experiment fed practical all mash; all hens.		Inactivated chicken pancreas; average		.0163					
			Chicken pancreas; average		³ .075					

* Numerals used in column 2 for Reference No. 114 refer to the number of subsamples per lot or to the number of determinations of special samples.

² From 1/3 to 1/2 as much as in same weight of whole egg. ³ Estimated from graph.

TABLE 10.—Compiled data on the folic acid content of foods—Continued

Item (1)	Description of sample* (2)	Preliminary treatment of sample; method; potency designation of impure standard (in italics) (3)	Folic acid (mg./100 gm.)					Moist basis (7a)	Reference No. (8)	
			Microbiological assays							Other assays
			<i>S. faecalis</i>		<i>L. casei</i>		<i>S. faecalis</i> or <i>L. casei</i> or both			
			Moist basis (4a)	Moisture- free basis (4b)	Moist basis (5a)	Moisture- free basis (5b)					Moist basis (6a)
Egg yolk—Continued										
Chicken—Continued										
	8 weeks on practical all mash feed; 4 hens.	Chicken pancreas; range.....			3.072-.081					
	8 weeks on experimental diet including sucrose+0.800 mg. PGA per kg. diet; 4 hens.	Chicken pancreas.....			3.087					
	8 weeks on experimental diet including sucrose+0.400 mg. PGA per kg. diet; 4 hens.	.....do.....			3.037				
	8 weeks on experimental diet including sucrose+0.200 mg. PGA per kg. diet; 4 hens.	.....do.....			3.033				
	8 weeks on experimental diet including sucrose.	.....do.....			3.026				
	8 weeks on experimental diet including starch+0.400 mg. PGA per kg. diet; 4 hens.	.....do.....			3.070				
	8 weeks on experimental diet including starch+0.200 mg. PGA per kg. diet; 4 hens.	.....do.....			3.056				
	Single comb white leghorn pullets; practical rations: All groups prior to experiment	(Whole egg boiled 5 minutes); taka-diastase. ⁴	.0162							
	Control group 4 pullets:									
	First week.....	.....do.....	.0134						
	Second week.....	.....do.....	.0209						
	Fourth week.....	.....do.....	.0099						
	Sixth week.....	.....do.....	.0076						
	Eighth week.....	.....do.....	.0092						
	Tenth week.....	.....do.....	.0146						
	Single comb white leghorns; basal diet contained 0.008 mg. PGA per kg. diet; each group 4 pullets:									
	Basal diet; 1-8 weeks.....	(Whole egg boiled 5 minutes); taka-diastase; ⁴ range.	.0018-.0102							
	Basal diet+0.25 mg. PGA per kg. diet; 1-10 weeks.	.....do.....	.0023-.0166						
	Basal diet+0.50 mg. PGA per kg. diet; 1-10 weeks.	.....do.....	.0027-.0135						
	Basal diet+0.75 mg. PGA per kg. diet; 2-10 weeks.	.....do.....	.0044-.0151						

	Basal diet+1.0 mg. PGA per kg. diet; 1-10 weeks.	do	.0056-.0207					
	Basal diet+1.25 mg. PGA per kg. diet; 1-10 weeks.	do	.0080-.0235					
	Basal diet+1.50 mg. PGA per kg. diet; 1-10 weeks.	do	.0149-.0276					
	Basal diet+2.0 mg. PGA per kg. diet; 1-10 weeks.	do	.0099-.0257					
	Basal diet+3.0 mg. PGA per kg. diet; 1-10 weeks.	do	.0238-.0375					
	Single comb white leghorns; basal diet contained 0.008 mg. PGA per kg. diet:							
	Basal diet+sucrose		Approx. .0035					
	Basal diet+dextrin		Approx. .0065					112
	Agricultural Research Center; 7 <i>S. faecalis</i> , 5 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	.0127 .0090-.0148	.026	.0131 .0100-.0165	.027		114
		Untreated	.011					
Dried	1 sample	Chicken pancreas	.052					107
		Hog kidney	.047					
		Chicken pancreas; hog kidney	.055					
		Buffered; autoclaved; chicken pancreas; specified method; average and range.	.0997 .0526-.192		.092 .048-.190			
		Buffered; autoclaved; chicken pancreas or hog kidney; other than specified method; average and range.	.146 .055-.390		.0595 .0490-.0697			44
	1948 A.O.A.C. collaborative assay.	Chick weight method; 3 laboratories; average and range.					.284 .143-.43	
		Chick hematocrit method; 1 laboratory					.14	
		Chick hemoglobin method; 1 laboratory					.17	
	Special sample	Buffered; autoclaved; chicken pancreas		.048		.062		
		Buffered; autoclaved	.038					114
		Buffered; autoclaved; hog kidney	.028					
		Buffered; autoclaved; chicken pancreas	.058					
Turkey	Low PGA diet	Takadiastase	.031					102
	Supplemented diet	do	.047					
		Autoclaved; incubated; average	.0419					
		Incubated; average	.0602					
	Broad-breasted Bronze; 7 assays.	Autoclaved; chicken pancreas; average	.0629					29
		Chicken pancreas; average	.1297					
		Inactivated chicken pancreas; average	.0608					
Eggplant:		Autolysis	0					
Raw	High-quality sample	Takadiastase	0					120
		Hog kidney	0					
	Washington, D. C., market: 2	Buffered; autoclaved; average and range	.0033 .0010-.0056		.0043 .0011-.0074			
	5 <i>S. faecalis</i> , 4 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	.0147 .0086-.0267	.186	.0146 .0111-.0204	.185		
	Texas market; 3	do			.0048 .0040-.0053	.069		114
	Texas market; 2	do			.0079 .0074-.0084	.108		

* Numerals used in column 2 for Reference No. 114 refer to the number of subsamples per lot or to the number of determinations of special samples.

† Estimated from graph. † Comparable results from hog kidney or chicken pancreas in preliminary studies noted by authors.

TABLE 10.—Compiled data on the folic acid content of foods—Continued

Item (1)	Description of sample* (2)	Preliminary treatment of sample; method; potency designation of impure standard (in italics) (3)	Folic acid (mg./100 gm.)							Reference No. (8)
			Microbiological assays					Other assays		
			<i>S. faecalis</i>		<i>L. casei</i>		<i>S. faecalis</i> or <i>L. casei</i> or both	Moist basis (7a)		
			Moist basis (4a)	Moisture- free basis (4b)	Moist basis (5a)	Moisture- free basis (5b)	Moist basis (6a)			
Endive: Raw	1 sample	Buffered; heated 3 minutes; incubated pH 4.5.	.017						91	
		Buffered; heated 3 minutes; takadias- tase.	.018							
		Buffered; heated 3 minutes; hog kidney.	.090							
		Autolyzed in water.	.046							
		Incubated pH 4.5.	.037							
		Takadiastase.	.035							
		Takadiastase (corrected for conjugate content of takadiastase).	(.029)							
		Hog kidney.	.087							
		Buffered; heated 3 minutes; hog kid- ney; average and range.	.075 .066-.089	.79 .63-.80	.062 .050-.075	.65 .56-.75				
		Buffered; heated 3 minutes; hog kidney.		.630		.710				
		Garden or greenhouse; 4 sam- ples.								
		Garden or greenhouse sample.								
		Stored in a wax bag:								
		1 day at room temperature	do		.520		.660			
		2 days at room temperature	do		.380		.490			
3 days at room temperature	do		.180		.260					
1 day in refrigerator	do		.490		.470					
2 days in refrigerator	do		.650		.580					
1 week in crushed ice	do		.670		.630					
2 weeks in crushed ice	do		.760		.610					
Broadleaf; Texas market; 2		Buffered; autoclaved; chicken pancreas; average and range.			.0637 .0619-.0654	1.249		41		
White curled; Texas market; 2	do				.0268 .0247-.0288	.419				
Green curled; Texas A. and M. College Farm; 2	do				.0495 .0478-.0512	.669				
Escarole: Raw	Texas market; 2	do			.0258 .0233-.0283	.496				
Fat, hydro- genated	4	do	Not measurable		.00004 .00000-.00008				114	
Fig	Texas market; 4	do			.0067 .0049-.0088	.039				
Dried	Composite of several brands:									
	1	Buffered; autoclaved	.0052		.0032					
	4 <i>S. faecalis</i> , 2 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	.0146 .0117-.0179	.019	.0074	.010				
Filbert	Washington, D. C., market; 7 <i>S. faecalis</i> , 6 <i>L. casei</i> .	do	.0711 .0555-.0887	.074	.0621 .0550-.0680	.064				

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Fish:										
Raw		Takadiastase-papain; 40,000	.164							} 127
		[200,000]	[.0328]							
Dried	Charales	Takadiastase	.052	.055						} 50
Flaxseed	1948 crop; composite U. S. sample:									
	2 <i>S. faecalis</i> , 3 <i>L. casei</i>	Buffered; autoclaved; average and range	.0241		.0174					} 114
			.0183-.0298		.0153-.0200					
	4 <i>S. faecalis</i> , 5 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	.0470	.050	.0467	.050				
			.0368-.0534		.0316-.0730					
Flour. See										} 114
Wheat, Rye, etc.										
Fruit, mixed:										
Dried	Fruit cake mixture:									
	1	Buffered; autoclaved	.0004		.0001					} 114
	6 <i>S. faecalis</i> , 4 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	.0018	.002	.0013	.002				
			.0009-.0034		.0010-.0016					
Goosefoot:										
Raw	Epazote (<i>Chenopodium ambrosioides</i> L.).	Takadiastase	.023	.241						} 50
	Huauzontle (<i>Chenopodium nuttallii</i> Saff.).	do	.058	.207						
	Quelite cenizo (<i>Chenopodium mexicanum</i> Moq.).	do	.094	.562						
Grape:										
Raw		Buffered; heated 45 minutes (abstract); chemical method.						.326		} 8
Green	Washington, D. C., market:									
	2	Buffered; autoclaved; average and range	.0018		.0010					} 114
			.0017-.0018		.0009-.0011					
	3 <i>S. faecalis</i> , 2 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	.0050	.026	.0050	.026				
	Texas market; 4	do	.0046-.0054		.0043-.0057	.019				
					.0043-.0048					
Red	Washington, D. C., market:									
	2	Buffered; autoclaved; average and range	.0032		.0030					} 114
			.0031-.0033		.0029-.0031					
	2 <i>S. faecalis</i> , 3 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	.0064	.034	.0054	.029				
	Texas market; 2	do	.0060-.0068		.0046-.0061	.015				
					.0028-.0030					
Grapefruit:										
Raw	1 sample, 4 specimens	Takadiastase-papain; 40,000	.055	.49						} 25
		[200,000]	[.011]	[.098]						
	Washington, D. C., market:									
	1	Buffered; autoclaved	.0015		.0014					} 114
	2	Buffered; autoclaved; chicken pancreas; average and range.	.0028	.028	.0022	.022				
			.0026-.0029		.0020-.0023					
	Washington, D. C., market	Buffered; autoclaved; chicken pancreas	.00276		.00256					
	Texas market; 2	Buffered; autoclaved; chicken pancreas; average and range.			.0033	.026				
					.0023-.0042					

* Numerals used in column 2 for Reference No. 114 refer to the number of subsamples per lot or to the number of determinations of special samples.

TABLE 10.—Compiled data on the folic acid content of foods—Continued

Item (1)	Description of sample* (2)	Preliminary treatment of sample; method; potency designation of impure standard (in italics) (3)	Folic acid (mg./100 gm.)						Moist basis (7a)	Reference No. (8)	
			Microbiological assays					Other assays			
			<i>S. faecalis</i>		<i>L. casei</i>		<i>S. faecalis</i> or <i>L. casei</i> or both				
			Moist basis (4a)	Moisture- free basis (4b)	Moist basis (5a)	Moisture- free basis (5b)					Moist basis (6a)
Grapefruit—C Canned, sweetened.	Solid and liquid: Duncan; 1,000 field boxes; plant O.	Autoclaved 1 hour pH 7.2			.0009	.0060			67		
	Duplicate	do			.0011	.0070					
	Seeded; 750 field boxes; plant H.	do			.0006	.0036					
	Replicate	do			.0009	.0053					
	Replicate	do			.0008	.0044					
	Duncan; 600 field boxes; plant P.	do			.0006	.0039					
	Duncan; 600 field boxes; plant B.	do			.0008	.0047					
	Duplicate	do			.0009	.0057					
	Duncan; 252 field boxes; plant Q.	do			.0011	.0077					
	Duncan; 297 field boxes; plant Q.	do			.0013	.0084					
	Grapefruit juice: Raw	Duncan; 3,600 field boxes; plant E.	Autoclaved 1 hour pH 7.2			1.0018					67
		20 percent Marsh Seedless, 80 percent Duncan; 2,500 field boxes; plant L.	do			1.0008					
50 percent Marsh Seedless, 50 percent Duncan; 4,500 field boxes; plant B.		do			1.0008						
50 percent Marsh Seedless, 50 percent Duncan; 900 field boxes; plant F.		do			1.0009						
33 percent Marsh Seedless, 67 percent Duncan; 4,500 field boxes; plant J.		do			1.0008						
Seeded; 1,800 field boxes; plant H.		do			1.0009						
Canned		11 samples, 66 cans	Takadiastase; average and range			.0005 .0003-.0007	.0012 .0010-.0016			59	
		Duncan; 3,600 field boxes; plant E.	Autoclaved 1 hour pH 7.2			1.0022					
	20 percent Marsh Seedless, 80 percent Duncan; 2,500 field boxes; plant L.	do			1.0019						

	50 percent Marsh Seedless, 50 percent Duncan; 4,500 field boxes; plant B.	.do			1.0015					67
	50 percent Marsh Seedless, 50 percent Duncan; 900 field boxes; plant F.	.do			1.0017					
	33 percent Marsh Seedless, 67 percent Duncan; 4,500 field boxes; plant J.	.do			1.0015					
	Seeded; 1,800 field boxes; plant H.	.do			1.0017					
Ground-cherry, cutleaf:										
Raw	Tomates (<i>Physalis angulata</i> L.)	Takadiastase	.001	.012						50
Guava:										
Raw	Guayaba (<i>Psidium guajava</i> L.)	.do	.011	.054						
Halibut:										
Raw	2 samples, 2 specimens	Takadiastase-papain; 40,000; average [200,000]	.071 [.0142]	.27 [.054]						25
		40,000; range [200,000]	.043-.099 [.0086-.0198]							
	1 sample	Takadiastase-papain; 40,000 [200,000]	.053 [.0106]							26
Hawthorn:										
Raw	Tejocote (<i>Crataegus mexicana</i> Moc.)	Takadiastase	.002	.010						50
Honey										
	19 samples	Autolysis; 40,000 [200,000]	.003 [.0006]							66
Honeydew melon:										
Raw	Washington, D. C., market: 1 <i>S. faecalis</i> , 2 <i>L. casei</i>	Buffered; autoclaved; average and range	.0044		.0038	.0034-.0041				114
	2 <i>S. faecalis</i> , 3 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	.0077	.084	.0049	.0042-.0058	.053			
	Washington, D. C., market	Buffered; autoclaved; chicken pancreas	.00435		.00482					
Horse meat:										
Hindquarter	Normal ration; composite from 12 horses.	Takadiastase-papain					.057			22
	Ration deficient in B vitamins except thiamine.	.do					.016			
Jakfruit:										
Seed	Breadfruit; (<i>Artocarpus integrifolia</i> L.)	Fed boiled and dried; rat growth method							.19	11
Jujube:										
Raw	Texas A. and M. College Farm; 4.	Buffered; autoclaved; chicken pancreas; average and range.			.0083	.0058-.0099	.031			114
Kale:										
Raw	Garden or greenhouse; 1 sample	Buffered; heated 3 minutes; hog kidney	.092	.58	.100		.65			41
	Washington, D. C., market:									
	1	Buffered; autoclaved	.0177		.0443					114
	2	Buffered; autoclaved; chicken pancreas; average and range.	.0422 [.0390-.0453]	.367	.0595	.0540-.0650	.517			
	Washington, D. C., market	Buffered; autoclaved; chicken pancreas	.0411		.0464					

* Numerals used in column 2 for Reference No. 114 refer to the number of subsamples per lot or to the number of determinations of special samples. ¹ mg. per 100 ml.

TABLE 10.—Compiled data on the folic acid content of foods—Continued

(1)	(2)	(3)	Folic acid (mg./100 gm.)						(8)
			Microbiological assays					Other assays	
			<i>S. faecalis</i>		<i>L. casei</i>		<i>S. faecalis</i> or <i>L. casei</i> or both	Moist basis	
			Moist basis	Moisture- free basis	Moist basis	Moisture- free basis	Moist basis		
(4a)	(4b)	(5a)	(5b)	(6a)	(7a)	(4b)			
Kohlrabi:									
Raw.....	Garden or retail sample.....	Takadiastase.....	.007						90
	Garden or greenhouse; 2 sam- ples.	Buffered; heated 3 minutes; hog kidney; average and range.	.052	.555	.050	.52			41
	Texas market; 2.....	Buffered; autoclaved; chicken pancreas; average and range.	.048-.056	.47-.64	.043-.056	.49-.55			114
Lamb and mutton:									
Leg.....	All visible fat removed; 1 sam- ple, 1 specimen.	Takadiastase-papain; 40,000..... [200,000].....	.11 [.022]	.36 [.072]					25
	do.....	Takadiastase.....	.012		.011				103
	Texas A. and M. College Ani- mal Husbandry; 2.	Buffered; autoclaved; chicken pancreas; average and range.	.0082		.0064				114
Liver.....	do.....	do.....			.0033	.012			114
					.0032-.0034				25
Shoulder.....	1 sample, 4 specimens.....	Takadiastase-papain; 40,000..... [200,000].....	.077 [.0154]	.18 [.036]					103
	Texas A. and M. College Ani- mal Husbandry; 2.	Buffered; autoclaved; chicken pancreas; average and range.	.0082		.0068	.026			114
Stew meat.....	Washington, D. C., market: 4.....	Buffered; autoclaved; average and range	.0004		.0082				114
	14.....	Buffered; autoclaved; chicken pancreas; average and range.	.0002-.0005		.0074-.0090				114
	14.....	Buffered; autoclaved; chicken pancreas; average and range.	.0013	.003	.0025	.006			114
Lemon:									
Raw.....	Washington, D. C., market: 3.....	Buffered; autoclaved; average and range	.0003-.0022		.0003-.0064				114
	3.....	Buffered; autoclaved; average and range	.0024		.0025				50
	5.....	Buffered; autoclaved; chicken pancreas; average and range.	.0018-.0029		.0016-.0043				114
	5.....	Buffered; autoclaved; chicken pancreas; average and range.	.0063	.070	.0078	.087			114
	Washington, D. C., market.....	Buffered; autoclaved; chicken pancreas	.0042-.0102		.0041-.0120				114
			.00397		.00454				50
Lentil:									
Dry seed.....	Lenteja (<i>Ervum lens</i> L.).....	Takadiastase.....	.083	.093					50
	Composite of several brands: 4 <i>S. faecalis</i> , 2 <i>L. casei</i>	Buffered; autoclaved; average and range	.0259		.0230				114
	5.....	Buffered; autoclaved; chicken pancreas; average and range.	.0142-.0411		.0190-.0270				114
	5.....	Buffered; autoclaved; chicken pancreas; average and range.	.1010	.111	.0990	.108			114
			.0852-.1123		.0550-.1400				114
Lettuce:									
Raw.....	1 sample, 1 specimen.....	Takadiastase-papain; 40,000..... [200,000].....	.038 [.0076]	.73 [.146]					25
	Lechuga (<i>Lactuca sativa</i> L.).....	Takadiastase.....	.010	.202					50

Head	High-quality sample	do	.004					120
		Hog kidney	.023					
		Buffered; heated 3 minutes; autolysis pH 4.5.	.011	.024				
		Buffered; heated 3 minutes; takadiastase.	.010	.038				
	1 sample	Buffered; heated 3 minutes; hog kidney	.050	.060				
		Buffered; heated 3 minutes; takadiastase; hog kidney.	.052	.060				
		Buffered; heated 3 minutes; hog kidney; takadiastase.	.052	.068				
		Autolysis pH 4.5	.050					
		Takadiastase	.050					
		Hog kidney	.083					
		Takadiastase; hog kidney	.077					
	1 sample	Buffered; heated 3 minutes; autolysis pH 4.5.		.025				
		Buffered; heated 3 minutes; takadiastase.		.030				
		Buffered; heated 3 minutes; hog kidney		.076				
		Buffered; heated 3 minutes; takadiastase; hog kidney.		.082				
		Buffered; heated 3 minutes; incubated pH 4.5.	.018					
		Buffered; heated 3 minutes; takadiastase.	.019					
	1 sample	Buffered; heated 3 minutes; hog kidney	.140					
		Autolyzed in water	.041					
		Incubated pH 4.5	.039					
		Takadiastase	.051					
		Takadiastase (corrected for conjugate content of takadiastase).	(.045)					
		Hog kidney	.140					
		Water extract; mild heat; chemical method.		.046			.058	
		<i>Lactuca sativa</i> L.	Rat growth method				.10	
		Buffered; heated 45 minutes (abstract); chemical method.				.15		
	Iceberg; Texas market; 2	Buffered; autoclaved; chicken pancreas; average and range.		.0039	.098			
	do	do		.0025-.0053				
				.0028	.065			
	Iceberg; Texas market; 4	do		.0023-.0032				
				.0108	.257			
				.0103-.0115				
	Boston, immature; Washington, D. C., market:							
	1	Buffered; autoclaved	.0044	.0126				
	2	Buffered; autoclaved; chicken pancreas; average and range.	.0421	.0390	.750			
			.0348-.0493					
	Boston; Washington, D. C., market:							
	1	Buffered; autoclaved	.0026	.0031				
	3	Buffered; autoclaved; chicken pancreas; average and range.	.0109	.0112	.295			
			.0108-.0109	.0100-.0129				
	Iceberg; Washington, D. C., market:							
	2	Buffered; autoclaved; average and range	.0023	.0041				
			.0021-.0025	.0036-.0045				

* Numerals used in column 2 for Reference No. 114 refer to the number of subsamples per lot or to the number of determinations of special samples.

TABLE 10.—Compiled data on the folic acid content of foods—Continued

Item	Description of sample*	Preliminary treatment of sample; method; potency designation of impure standard (in italics)	Folic acid (mg./100 gm.)						Reference No.
			Microbiological assays					Other assays	
			<i>S. faecalis</i>		<i>L. casei</i>		<i>S. faecalis</i> or <i>L. casei</i> or both	Moist basis	
			Moist basis	Moisture-free basis	Moist basis	Moisture-free basis	Moist basis		
(1)	(2)	(3)	(4a)	(4b)	(5a)	(5b)	(6a)	(7a)	(8)
Lettuce—Con. Head—Continued	Iceberg; D. C. market—Con. 5	Buffered; autoclaved; chicken pancreas; average and range.	.0098	.228	.0103	.240			114
	Leaf	Takadiastase	.0086-.0112		.0085-.0135				
Leaf	Garden or retail sample	Water extract	.007		.016			90	
	do	Acid hydrolysis	.007		.025				
Garden or greenhouse; 4 samples.	Garden or greenhouse sample	Alkaline hydrolysis	.009		.012			41	
	Stored in a wax bag:	Takadiastase	.005		.004				
1 day at room temperature	do	Buffered; heated 3 minutes; hog kidney; average and range.	.008	1.03	.016	.85		41	
	2 days at room temperature	do	.084	1.00	.069	.900			
1 week in refrigerator	do	Buffered; heated 3 minutes; hog kidney	.058-.140	.93-1.23	.047-.110	.68-.97		41	
	1 week in crushed ice	do							
1 week in refrigerator	Garden or greenhouse sample	do		1.000		1.000		41	
	Stored in a wax bag:	do							
2 days at room temperature	do	do		1.000		1.000		41	
	1 week in refrigerator	do		.900		1.000			
1 week in crushed ice	do	do		1.000		1.000		41	
	do	do		2.000		1.500			
Garden or greenhouse sample	do	do		1.300		1.100		41	
	Stored in a wax bag:	do							
1 day at room temperature	do	do			.0543	.835		41	
	2 days at room temperature	do			.0521-.0556				
1 week in refrigerator	do	do			.0165	.434		41	
	1 week in crushed ice	do			.0151-.0179				
Oakleaf; Texas market; 3	do	do			.0450	.584		41	
	do	do			.0436-.0464				
Texas market; 2	do	do			.0584	1.043		41	
	do	do			.0521-.0647				
Black Seeded Simpson; Texas A. and M. College Farm; 2.	do	do						114	
	do	do							
Oakleaf; Texas market; 2	do	do						114	
	do	do							
Lima beans. See Beans, lima.								114	
Limes: Raw	Washington, D. C., market: 2	Buffered; autoclaved; average and range	.0025		.0026				114
	3	do	.0022-.0027		.0016-.0035			114	
Washington, D. C., market	do	Buffered; autoclaved; chicken pancreas; average and range.	.0037	.036	.0056	.054			114
	do	do	.0035-.0039		.0040-.0070				
		Buffered; autoclaved; chicken pancreas	.00390		.00439			114	

Mackerel: Canned	Atlantic (<i>Scomber scombrus</i>); drained solids:									
	Sample No. 1, 12 cans	Hog pancreas								.0012
	Sample No. 2, 12 cans	do								.0022
	Duplicate	do								.0009
	Sample No. 3, 12 cans	do								.0013
	Duplicate	do								.0013
	Sample No. 4, 12 cans	do								.0010
	Duplicate	do								.0015
	Pacific; drained solids; 1 sam- ple, 12 cans.	do								.0006
Mallow: Raw	Malva (<i>Malva</i> sp.)	Takadiastase	.240	1.010						
Mango: Raw	Mango amarillo variety (<i>Mangifera indica</i> , L.) (<i>Mangifera indica</i> L.)	Buffered; autoclaved; takadiastase; chicken pancreas. Rat growth method						0		
Melon: Raw		Buffered; heated 45 minutes (abstract); chemical method.								.02
										.158
Milk: Cow: Fluid:		{ Autolysis; 40,000	1.002							
		{ [200,000]	[1.0004]							
		{ Autoclaved 30 minutes; 40,000	1.001							
		{ [200,000]	[1.0002]							
Whole	1 sample	{ Takadiastase-papain; 40,000; (uncor- rected for vitamin in enzymes).	1.006							
		{ [200,000]	[1.0012]							
		{ Takadiastase-papain; 40,000 (corrected for vitamin in enzymes).	Negative							
	Jersey and Guernsey; 15 sam- ples.	{ Takadiastase-papain; 40,000; average [200,000]	1<.005 [1<.001]	1<.04 [1<.008]						
		{ 40,000; range [200,000]	1<.001-<.005 [1<.0002-<.001]							
	2 samples	Hog kidney	Nil-trace							
	12 samples	Chicken pancreas, 1 hour at 45° C; average and range	{ 1.00016 1.00009-.00024					1.0024 1.0011-.0074		
	Pasteurized	Hog kidney	1.00004							
	Mature milk									1.00067
	do									1.00064
	do									1.00061
	do									1.00060
	do									1.00059
	do									1.00058
	do									1.00058
	do									1.00045
	do									1.00039
	do									1.00034
	do									1.00032
	do									1.00031
	do									1.00023
	do									1.00021
	do									1.00020
	do									1.00020
	do									1.00019

* Numerals used in column 2 for Reference No. 114 refer to the number of subsamples per lot or to the number of determinations of special samples.

° Communication from F. M. Strong.

° Communication from Icie Macy Hoobler.

1 mg. per 100 ml.

TABLE 10.—Compiled data on the folic acid content of foods—Continued

Item	Description of sample*	Preliminary treatment of sample; method; potency designation of impure standard (in italics)	Folic acid (mg./100 gm.)						Moist basis	Reference No.
			Microbiological assays					Other assays		
			<i>S. faecalis</i>		<i>L. casei</i>		<i>S. faecalis</i> or <i>L. casei</i> or both			
			Moist basis	Moisture-free basis	Moist basis	Moisture-free basis				
(1)	(2)	(3)	(4a)	(4b)	(5a)	(5b)	(6a)	(7a)	(8)	
Milk—Continued										
Cow—Continued										
Fluid—Continued										
Whole—Continued										
	Mature milk—Continued									
	do							1.00018		(5)
	do							1.00018		
	do							1.00016		
	do							1.00016		
	do							1.00016		
	do							1.00016		
	do							1.00015		
	do							1.00014		
	do							1.00014		
	do							1.00014		
	do							1.00013		
	do							1.00012		
	do							1.00012		
	do							1.00011		
	do							1.00011		
	Above 32 samples of mature milk.	Average and range						1.000290			78
	Guernsey; 1 cow; postpartum:							1.000112-		
	0 days	No treatment						1.000670		
	1 day	do	1.00075							
	2 days	do	1.00020							
	4 days	do	1.00011							
	5 days	do	1.00010							
	6 days	do	1.00012							
	2 weeks	do	1.00010							
	3 weeks	do	1.00011							
	4 weeks	do	1.00016							
	6 weeks	do	1.00010							
	8 weeks	do	1.00045							
	10 weeks	do	1.00035							
	Holstein; 4 cows:									
	1st week	No treatment; average and range	1.00015							
			1.00010-	00027						
	2nd week	do	1.00060							
			1.000055-	000070						
	3rd week	do	1.00016							
			1.00006-	00040						

	Guernsey; 4 cows:							
	1st week	do.	{ 1.00021 1.00013-.00035					
	2nd week	do.	{ 1.00011 1.00007-.00018					
	3rd week	do.	{ 1.00018 1.00010-.00028					
	Jersey; 4 cows:							
	1st week	do.	{ 1.00010 1.00006-.00014					
	2nd week	do.	{ 1.00005 1.00002-.00010					
	3rd week	do.	{ 1.00012 1.00008-.00018					
	Commercial, pasteurized; 6 samples.	do.	{ 1.00026 1.00015-.00050					
	Texas A. and M. College Creamery; 3.	Buffered; autoclaved; chicken pancreas; average and range.		{ .0006 .0003-.0009		.005		114
		Autoclaved; 40,000	1.011					
		[200,000]	[1.0022]					
		Takadiastase-papain; 40,000 (uncorrected for vitamin in enzymes).	1.016					
Nonfat	1 sample	[200,000]	[1.0032]					124
		Takadiastase-papain; 40,000 (corrected for vitamin in enzymes).	1.008					
		[200,000]	[1.0016]					
		No treatment	.0009		.0007			
		pH 4 autoclaved 12 hours	.0006					
		0.1 N KOH autoclaved 1 hour	.0008					
		2 N KOH autoclaved 30 minutes	<.0004					76
		Takadiastase	.0005					
		Chicken pancreas	.0004					
Canned, evaporated								
		Rat method					(?)	37
	10	Buffered; autoclaved; chicken pancreas; average and range.	{ .0022 .0003-.0039	.008	.0007 .0003-.0012	.003		114
Dried: Whole	1 sample	Takadiastase	.0021		.0016			131
		Semipure conjugase	.0060		.0048			
		Chick methods					(?)	55
		Hog kidney	Nil		Nil			
	5 samples	do.	Nil-trace					61
		Takadiastase	Nil					
		0.1 N HCl autoclaved	Nil					
		Sodium acetate autoclaved	Nil					
		Rat growth method					.05	11
		Rat method					(?)	37
Nonfat	Feedstuff; 3 tests	Chick growth method; average and range.					{ .06 .05-.07	75
		Microbiological and chick assays				.01	Much higher	46
	Special sample; 3	Buffered; autoclaved; chicken pancreas; average and range.	{ .0034 .0025-.0039	.003	.0024 .0015-.0033	.002		114
Reconstituted	Evaporated milk reconstituted; 52 samples.	Chicken pancreas incubated 1 hour 45° C. average and range.	{ 1.00016 1.00008-.00033		1.0013 1.0002-.0029			55

* Numerals used in column 2 for Reference No. 114 refer to the number of subsamples per lot or to the number of determinations of special samples. ¹ mg. per 100 ml.

⁶ Communication from Icie Macy Hoobler. ⁷ The results are interpreted as further evidence of a low concentration of folic acid in evaporated and dried milk.

⁸ Methods not sensitive enough to assay milk. Appears to give results higher than those given by *S. faecalis* or *L. casei*.

TABLE 10.—Compiled data on the folic acid content of foods—Continued

Item (1)	Description of sample* (2)	Preliminary treatment of sample; method; potency designation of impure standard (in italics) (3)	Folic acid (mg./100 gm.)					Reference No. (8)	
			Microbiological assays						Other assays
			<i>S. faecalis</i>		<i>L. casei</i>		<i>S. faecalis</i> or <i>L. casei</i> or both		Moist basis (7a)
			Moist basis (4a)	Moisture- free basis (4b)	Moist basis (5a)	Moisture- free basis (5b)	Moist basis (6a)		
Milk—Continued Cow—Continued Reconstituted—Continued Evaporated milk reconstituted:	Sample No. 1.....	Not treated.....	1. 00021	1. 0016	} 55		
		Chicken pancreas incubated 1 hour 45° C.	1. 00027	.....	1. 0023	.....		
	Sample No. 2.....	Not treated.....	1. 00008	.....	1. 0009	.....		
		Chicken pancreas incubated 1 hour 45° C.	1. 00012	.....	1. 0015	.....		
	Sample No. 3.....	Not treated.....	1. 00007	.....	1. 0004	.....		
		Chicken pancreas incubated 1 hour 45° C.	1. 00009	.....	1. 0004	.....		
	Sample No. 4.....	Not treated.....	1. 00013	.....	1. 0016	.....		
		Chicken pancreas incubated 1 hour 45° C.	1. 00020	.....	1. 0016	.....		
	Sample No. 5.....	Not treated.....	1. 00011	.....	1. 0018	.....		
		Chicken pancreas incubated 1 hour 45° C.	1. 00012	.....	1. 0018	.....		
	Sample No. 6.....	Not treated.....	1. 00014	.....	1. 0010	.....		
		Chicken pancreas incubated 1 hour 45° C.	1. 00018	.....	1. 0014	.....		
	Evaporated milk reconstituted	Hog kidney.....	1. 0003		} 81	
	Dried milk reconstituted	do.....	1. 0002	.....	.....	.....
Nonfat dry milk reconstituted; 11 samples.	Chicken pancreas incubated 1 hour 45° C.; average and range.	1. 00014	.....	1. 0018	.....	} 55	
Dry infant food reconstituted; brand 1.	Hog kidney.....	1. 00007-. 00022	.....	1. 0013-. 0026	.....			
Dry infant food reconstituted; brand 2.	do.....	1. 0003	.....	.....	.....	} 81
Goat: Whole	4 samples.....	Takadiastase-papain; 40, 000; average [200, 000].....	1<. 003 [<. 0006]		} 124		
		40, 000; range [200, 000].....	1<. 001-<. 003 [<. 0002-<. 0006]	.....	.....		
	7 samples stored 4° C (toluene): 0 days.....	No treatment; average and range.....	1. 00012	.....	.....	} 124	
	7 days.....	do.....	1. 00006-. 00020	.....	.....		
	14 days.....	do.....	1. 00086	.....	.....		
	21 days.....	do.....	1. 00027-. 00170	.....	.....		
			1. 00089	.....	.....		
			1. 00050-. 00150	.....	.....		
			1. 00094	.....	.....		
			1. 00019-. 00320	.....	.....		

Reconstituted Human	28 days	do		1.00088						} 27		
				1.00026-.00240								
	Saenen goats; postpartum:											
	4 weeks, 7 goats	do			1.00027							
					1.00012-.00050							
	6 weeks, 7 goats	do			1.00018							
					1.00006-.00035							
	8 weeks, 7 goats	do			1.00023							
					1.00008-.00042							
	10 weeks, 4 goats	do			1.00042							
					1.00012-.00057							
	Evaporated milk reconstituted	Hog kidney			1.0002							} 81
	Subject No. 407:											
	3rd day	Takadiastase-papain; 40,000			1.050							
		[200,000]			[1.010]							
	5th day	Takadiastase-papain; 40,000			1.044							
		[200,000]			[1.0088]							
	8th day	Takadiastase-papain; 40,000			1.045							
		[200,000]			[1.009]							
	Subject No. 410:											
3rd day	Takadiastase-papain; 40,000			1.046								
	[200,000]			[1.0092]								
5th day	Takadiastase-papain; 40,000			1.047								
	[200,000]			[1.0094]								
8th day	Takadiastase-papain; 40,000			1.048								
	[200,000]			[1.0096]								
Subject No. 401, 10th day	Takadiastase-papain; 40,000			1.033								
	[200,000]			[1.0066]								
Subject No. 27, 20th day	Takadiastase-papain; 40,000			1.044								
	[200,000]			[1.0088]								
Mature milk										} 124		
do								1.00036				
do								1.00032				
do								1.00031				
do								1.00031				
do								1.00031				
do								1.00030				
do								1.00028				
do								1.00026				
do								1.00023				
do								1.00020				
do								1.00020				
do								1.00020				
do								1.00020				
do								1.00019				
do								1.00017				
do								1.00016				
do								1.00016				
do								1.00015				
do								1.00015				
do								1.00014				
do								1.00014				
Above 22 samples (15 days to 15 months).	Average and range							1.00022				
								1.00014-.00036				
Fresh	Hog kidney			1.0003						} 77		
Boiled (same lot as fresh)	do			1.0003								

* Numerals used in column 2 for Reference No. 114 refer to the number of subsamples per lot or to the number of determinations of special samples. 1 mg. per 100 ml.

6 Communication from Icie Macy Hoobler.

TABLE 10.—Compiled data on the folic acid content of foods—Continued

Item (1)	Description of sample* (2)	Preliminary treatment of sample; method; potency designation of impure standard (in italics) (3)	Folic acid (mg./100 gm.)					Moist basis (7a)	Reference No. (8)
			Microbiological assays						
			<i>S. faecalis</i>		<i>L. casei</i>		<i>S. faecalis</i> or <i>L. casei</i> or both		
			Moist basis (4a)	Moisture- free basis (4b)	Moist basis (5a)	Moisture- free basis (5b)	Moist basis (6a)		
Milk—Continued Human—Con- tinued	Subject No. 1; postpartum:							27	
	3 days.....	No treatment.....	1.000030	.....	.....	.....	.....
	4 days.....	do.....	1.000010	.....	.....	.....	.....
	5 days.....	do.....	1.000030	.....	.....	.....	.....
	6 days.....	do.....	1.000015	.....	.....	.....	.....
	7 days.....	do.....	1.000025	.....	.....	.....	.....
	Subject No. 2; 4 days post- partum.	do.....	1.00015	.....	.....	.....	.....
	Subject No. 2; 5 days post- partum.	do.....	1.000050	.....	.....	.....	.....
	Subject No. 3, 3 days post- partum.	do.....	No measurable quantity	.....	.....	.....	.....
	Subject No. 3; 4 days post- partum.	do.....	1.000025	.....	.....	.....	.....
	Subject No. 3; 5 days post- partum.	do.....	No measurable quantity	.....	.....	.....	.....
	Subject No. 4; 3 days post- partum.	do.....	No measurable quantity	.....	.....	.....	.....
	Subject No. 4; 4 days post- partum.	do.....	1.000050	.....	.....	.....	.....
	Subject No. 5; 4 days post- partum.	do.....	1.000025	.....	.....	.....	.....
	Subject No. 5; 19 days post- partum.	do.....	1.00015	.....	.....	.....	.....
Subject No. 5; 20 days post- partum.	do.....	1.000090	.....	.....	.....	.....
Subject No. 5; 21 days post- partum.	do.....	1.00018	.....	.....	.....	.....
Sheep.....	80-100 days postpartum; 9 sheep.	No treatment; average and range.....	{ 1.00022 1.00008-.00056	.....	.....	.....	.....
Molasses: Cane.....	1 sample.....	Takadiastase-papain; 40,000 [200,000].....	.0095 [.0019]	.013 [.0026]	25	
	High-test.....	Takadiastase.....	.0015	101	
	Blackstrap.....	do.....	.0038	.....	.....	.....	.....
Beet.....	Blackstrap; 6 samples.....	Takadiastase.....	.0210043	53 101	
Mombin: Raw.....	Cirueta Mexicana (<i>Spondias lu- tea</i> L.).....	do.....	.019	.066	50	

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Mushroom: Raw	1 sample, 3 specimens	Takadiastase-papain; 40,000 [200,000]	.098 [.01916]	.78 [.156]				} 25	
	Washington, D. C., market: 3 <i>S. faecalis</i> , 2 <i>L. casei</i>	Buffered; autoclaved; average and range	.0202 .0140-.0259		.0208 .0183-.0232				} 114
	5 <i>S. faecalis</i> , 4 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	.0304 .0272-.0330	.366	.0276 .0232-.0310	.333			
	Texas market; 4	do			.0141 .0134-.0155	.172			
Mustard greens: Raw	High-quality sample	Autolysis Takadiastase Hog kidney	.032 .023 .062					} 120	
	Texas market; 2	Buffered; autoclaved; chicken pancreas; average and range.			.0377 .0354-.0399	.460			} 114
	do	do			.0169 .0140-.0197	.225			
	Dried	1 sample	Untreated Chicken pancreas Hog kidney Chicken pancreas; hog kidney	.097 .455 .410 .475					} 107
						1.2		} 46	
		Buffered; autoclaved; chicken pancreas; specified method; average and range. Buffered; autoclaved; chicken pancreas or hog kidney; other than specified method; average and range. Chick growth method; 4 laboratories; average and range. Chick thymus weight method; 1 labora- tory. Chick hematocrit method; 2 labora- tories. Chick total cell count method; 1 labora- tory. Chick hemoglobin method; 1 laboratory	.877 .513-1.110 .921 .480-1.240		.854 .657-1.038 .831 .650-1.093				} 44
1948 A.O.A.C. collaborative as- say.							1.38 1.3-1.46 1.47		
							1.00-1.36		
		1949 A.O.A.C. collaborative as- say. (1948 sample stored at 10° F.)	Buffered; autoclaved; chicken pancreas; specified method; average and range. Buffered; autoclaved; chicken pancreas or other treatment; other than speci- fied method; average and range.	.927 .735-1.13 .948 .75-1.13		.944 .685-1.174 1.32 1.32			} 45
Special sample; 2		Buffered; autoclaved; chicken pancreas; average.		1.650		.800			
do		do			.874	.880			
			Buffered; autoclaved Buffered; autoclaved; hog kidney Buffered; autoclaved; chicken pancreas	.128 .493 1.047					} 114
Nectarines: Raw		Texas market; 3	Buffered; autoclaved; chicken pancreas; average and range.			.0201 .0129-.0271	.131		
Nettle: Raw	Blind	Buffered; heated 45 minutes (abstract); chemical method.					.475	} 8	
	Hot	do					.584		
Oat: Whole grain		Takadiastase-papain; 3,100 [200,000]		2.20 [.0341]				} 20	

* Numerals used in column 2 for Reference No. 114 refer to the number of subsamples per lot or to the number of determinations of special samples. ¹ mg. per 100 ml.

TABLE 10.—Compiled data on the folic acid content of foods—Continued

Item (1)	Description of sample* (2)	Preliminary treatment of sample; method; potency designation of impure standard (in italics) (3)	Folic acid (mg./100 gm.)						Reference No. (8)
			Microbiological assays					Other assays Moist basis (7a)	
			<i>S. faecalis</i>		<i>L. casei</i>		<i>S. faecalis</i> or <i>L. casei</i> or both		
			Moist basis (4a)	Moisture- free basis (4b)	Moist basis (5a)	Moisture- free basis (5b)	Moist basis (6a)		
Oat—Con. Whole grain—	Continued								
	Avena (<i>Avena sativa</i> L.) 2 samples	Takadiastase Hog kidney Buffered; heated 45 minutes (abstract); chemical method.	.040 Trace	.043				.14	50 61 8
	Ground	Buffered; autoclaved pH 4.5 Buffered; autoclaved; hog kidney Buffered; autoclaved; chicken pancreas	.019 .055 .053						91
	Feedstuff; 7 samples	Buffered; autoclaved; hog kidney; average and range.	.040		.034				41
	Feedstuff; 3 tests	Chick growth; average and range	.028-.055		.026-.054				41
	White; 1948 crop; composite U. S. sample: 2	Buffered; autoclaved; average and range	.0267		.0133			.02 .00-.05	75
	4 <i>S. faecalis</i> , 5 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	.0261-.0273 .0557 .0454-.0663	.062	.0069-.0196 .0235 .0160-.0263	.026			114
Breakfast cereal—	Hulled; 3 samples	Buffered; autoclaved; hog kidney; average and range.	.050 .032-.059		.040 .030-.046				41
	Meal: 2 <i>S. faecalis</i> , 3 <i>L. casei</i>	Buffered; autoclaved; average and range	.0091		.0064				
	4	Buffered; autoclaved; chicken pancreas; average and range.	.0061-.0121 .0312 .0208-.0396	.034	.0046-.0092 .0298 .0275-.0312	.032			
	Meal; infant food: 2 <i>S. faecalis</i> , 1 <i>L. casei</i>	Buffered; autoclaved; average and range	.0192		.0156				
	4	Buffered; autoclaved; chicken pancreas; average and range.	.0188-.0195 .0476 .0429-.0547	.050	.0388 .0385-.0395	.041			114
	Ready-to-eat: 1	Buffered; autoclaved	.0066		.0059				
	2 <i>S. faecalis</i> , 3 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	.0222	.023	.0227	.024			
		Buffered; heated 45 minutes (abstract); chemical method.	.0215-.0228		.0216-.0250				
Sprouted								.594	8
Sprouted, de- hydrated		Takadiastase-papain; 3, 100 [200, 000]		14.30 [.17165]					20
Okra: Raw	1 sample, 10 specimens	Takadiastase-papain; 40, 000 [200, 000]	.053 [.0106]	.52 [.104]					25

80

88

Reconstituted	2,000 field boxes; plant J	do			1.0032				
	2,143 field boxes; plant K	do			1.0015				
	Canned concentrate reconstituted:								
	Midseason; 900 field boxes; plant M.	Autoclaved 1 hour pH 7.2			1.0028				
	Valencia; 900 field boxes; plant M.	do			1.0022				
	39 percent Pineapple, 19 percent Seedlings, and 42 percent Valencia; 4,300 field boxes; plant J.	do			1.0024				
	Duplicate; plant J	do			1.0018				
	Pineapple; 1,440 field boxes; plant B.	do			1.0022				
	Frozen concentrate reconstituted:								
	40 percent Indian River, 60 percent Valencia; 2,500 field boxes; plant N.	do			1.0017				
	33 percent Seedlings, 67 percent Valencia; 1,000 field boxes; plant N.	do			1.0020				
	33 percent Seedlings, 67 percent Valencia; 1,128 field boxes; plant N.	do			1.0020				
	15 percent Pineapple, 85 percent Valencia; 2,979 field boxes; plant B.	do			1.0019				
	2 percent Pineapple, 98 percent Valencia; 2,977 field boxes; plant B.	do			1.0017				
	Valencia; 900 field boxes; plant M.	do			1.0012				
Orange-grapefruit sections: Canned, sweetened	42 percent Valencia, 58 percent Duncan; 342 field boxes; plant K.	do			.0022	.0118			
	33 percent Valencia, 67 percent Duncan; 1,200 field boxes; plant F.	do			.0018	.0103			
	Replicate	do			.0019	.0119			
	do	do			.0015	.0084			
Oyster:	Raw	1 sample, 4 specimens	Takadiastase-papain; 40,000	.24	1.2				
			[200,000]	[.048]	[.24]				
Parsley:	Raw	Perejil (<i>Carum petroselinum</i> Benth).	Takadiastase	.095	.629				
		Garden or retail sample	do	.088					
		Garden or greenhouse sample	Buffered; heated 3 minutes; hog kidney	.170	1.20	.170	1.20		

67

25

50

90

41

* Numerals used in column 2 for Reference No. 114 refer to the number of subsamples per lot or to the number of determinations of special samples. 1 mg. per 100 ml.

TABLE 10.—Compiled data on the folic acid content of foods—Continued

(1)	(2)	(3)	Folic acid (mg./100 gm.)					(8)	
			Microbiological assays				Other assays		
			<i>S. faecalis</i>		<i>L. casei</i>		<i>S. faecalis</i> or <i>L. casei</i> or both		Moist basis
			Moist basis (4a)	Moisture- free basis (4b)	Moist basis (5a)	Moisture- free basis (5b)	Moist basis (6a)		
84 Parsley—Con. Raw—Continued	Garden or greenhouse sample . . .	Buffered; heated 3 minutes; hog kidney	-----	1. 200	-----	1. 200	-----	41	
	Stored in a wax bag:	-----	-----	-----	-----	-----	-----		
	3 days at room temperature . . .	do	-----	. 700	-----	. 620	-----		
	2 weeks in refrigerator . . .	do	-----	1. 000	-----	. 830	-----		
	2 weeks in crushed ice . . .	do	-----	1. 400	-----	1. 400	-----	8	
	-----	Buffered; heated 45 minutes (abstract); chemical method.	-----	-----	-----	-----	. 28		
	Texas market; 3 . . .	Buffered; autoclaved; chicken pancreas; average and range.	-----	-----	. 0429	. 452	-----	114	
	Texas market; 2 . . .	do	-----	-----	. 0365-. 0540	-----	-----		
	do . . .	do	-----	-----	. 0294	. 354	-----		
	do . . .	do	-----	-----	. 0264-. 0324	. 413	-----		
84 Parsnip: Raw-----	Washington, D. C., market: 2 . . .	Buffered; autoclaved; average and range	. 0084	-----	. 0068	-----	-----	24	
	3 <i>S. faecalis</i> , 2 <i>L. casei</i> . . .	Buffered; autoclaved; chicken pancreas; average and range.	. 0070-. 0097	-----	. 0062-. 0073	-----	-----		
	Texas market; 2 . . .	do	. 0257	. 117	. 0367	. 167	-----		
	-----	do	. 0247-. 0269	-----	. 0085	. 043	-----		
	Pea: Raw-----	1 sample-----	{ Autolysis; 40,000 063	-----	-----	-----	-----	25
			{ [200,000]	[. 0126]	-----	-----	-----	-----	
			{ Takadiastase; 40,000 12	-----	-----	-----	-----	
			{ [200,000]	[. 024]	-----	-----	-----	-----	
			{ Papain; 40,000 11	-----	-----	-----	-----	
			{ [200,000]	[. 022]	-----	-----	-----	-----	
{ Malt diastase; 40,000 . . . . .			. 025	-----	-----	-----	-----
{ [200,000]			[. 005]	-----	-----	-----	-----		
{ Pancreatic amylase; 40,000 . . . . .			. 038	-----	-----	-----	-----
{ [200,000]			[. 0076]	-----	-----	-----	-----		
2 samples, 2 pounds-----	{ Takadiastase-papain; 40,000 . . . . .	. 12	-----	-----	-----	-----	50	
	{ [200,000]	[. 024]	-----	-----	-----	-----			
	{ Takadiastase; papain; 40,000 . . . . .	. 12	-----	-----	-----	-----		
	{ [200,000]	[. 024]	-----	-----	-----	-----			
	{ Takadiastase-papain; 40,000 . . . . .	. 13	. 52	-----	-----	-----		
	{ [200,000]	[. 026]	[. 104]	-----	-----	-----			
	{ Takadiastase . . . . .	. 009	. 027	-----	-----	-----		
	{ do . . . . .	. 059	. 050	-----	-----	-----		
	{ Garden or retail sample . . . . .	. 023	. 114	. 022	. 105	-----		
	{ Garden or greenhouse; 2 sam- ples.	Buffered; heated 3 minutes; hog kidney; average and range.	. 019-. 026	. 097-. 13	. 020-. 023	. 10-. 11		-----	

	Garden or greenhouse sample	Buffered; autoclaved; chicken pancreas		.097		.102		
	Stored in a wax bag:							
	1 day at room temperature	do.		.088		.093		} 41
	3 days at room temperature	do.		.056		.051		
	1 week in refrigerator	do.		.089		.070		
	2 weeks in refrigerator	do.		.089		.108		
	1 week in crushed ice	do.		.112		.112		
	2 weeks in crushed ice	do.		.108		.108		
	Washington, D. C., market:							
	3	Buffered; autoclaved; average and range	{ .0153			.0142		} 114
			{ .0138-.0166			.0072-.0180		
	6 <i>S. faecalis</i> , 5 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	{ .0301	.130		.0355	.153	
			{ .0188-.0445			.0205-.0558		
	Washington, D. C., market:							
	3 <i>S. faecalis</i> , 2 <i>L. casei</i>	Buffered; autoclaved; average and range	{ .0098			.0069		
			{ .0053-.0121			.0063-.0074		
	4 <i>S. faecalis</i> , 2 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	{ .0250	.097		.0135	.052	
			{ .0100-.0436			.0111-.0158		
	Washington, D. C., market:							
	2	Buffered; autoclaved; average and range	{ .0036			.0029		
			{ .0032-.0038					
	4	Buffered; autoclaved; chicken pancreas; average and range.	{ .0057	.024		.0045	.019	
			{ .0052-.0064			.0042-.0054		
	Washington, D. C., market:							
	3	Buffered; autoclaved; average and range	{ .0070			.0041		
			{ .0066-.0078			.0038-.0044		
	4	Buffered; autoclaved; chicken pancreas; average and range.	{ .0122	.049		.0117	.047	
			{ .0118-.0123			.0110-.0130		
	Texas market; 3	do.				.0269	.108	
						.0175-.0379		
	Texas market; 7	do.				.0240	.098	
						.0164-.0461		
	Texas market; 3	do.				.0203	.081	
						.0096-.0346		
Canned	Solid and liquid; 10 samples, 60 cans.	Takadiastase; average and range	{ .0017			.0044		} 59
			{ .0010-.0022			.0032-.0052		
		Buffered; heated 3 minutes; hog kidney	{ .012	.081		.010	.064	} 41
Dried, split:								
Green	Composite of several brands:							
	2 <i>S. faecalis</i> , 3 <i>L. casei</i>	Buffered; autoclaved; average and range	{ .0085			.0064		} 114
			{ .0083-.0086			.0040-.0086		
	4 <i>S. faecalis</i> , 3 <i>L. casei</i>	Buffered, autoclaved; chicken pancreas; average and range.	{ .0201	.022		.0222	.024	
			{ .0115-.0285			.0127-.0300		
Yellow	Composite of several brands:							
	2	Buffered; autoclaved; average and range	{ .0056			.0042		} 114
			{ .0049-.0063			.0041-.0043		
	5	Buffered; autoclaved; chicken pancreas; average and range.	{ .0304	.033		.0216	.024	
			{ .0259-.0383			.0165-.0265		
Peach:								
Raw	1 sample, 3 specimens	Takadiastase-papain; 40,000 [200,000]	{ .017 [.0034]	.065 [.013]				} 25
	Washington, D. C., market:							
	1 <i>S. faecalis</i> , 2 <i>L. casei</i>	Buffered; autoclaved; average and range	{ .0009			.0003		} 114
						.0002-.0003		
	2 <i>S. faecalis</i> , 3 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	{ .0023	.020		.0023	.020	
			{ .0021-.0024			.0021-.0025		
	Washington, D. C., market	Buffered; autoclaved; chicken pancreas	{ .00215			.00199		

* Numerals used in column 2 for Reference No. 114 refer to the number of subsamples per lot or to the number of determinations of special samples.

TABLE 10.—Compiled data on the folic acid content of foods—Continued

Item (1)	Description of sample* (2)	Preliminary treatment of sample; method; potency designation of impure standard (in italics) (3)	Folic acid (mg./100 gm.)						Reference No. (8)
			Microbiological assays					Other assays	
			<i>S. faecalis</i>		<i>L. casei</i>		<i>S. faecalis</i> or <i>L. casei</i> or both	Moist basis (7a)	
			Moist basis (4a)	Moisture- free basis (4b)	Moist basis (5a)	Moisture- free basis (5b)	Moist basis (6a)		
Peach—Con.									
Raw—Continued	Elberta; Texas market; 4	Buffered; autoclaved; chicken pancreas; average and range.			.0013 .0010-.0019	.008		114	
Canned	Solid and liquid; 9 samples, 54 cans.	Takadiastase; average and range	.0005 .0003-.0012		.0015 .0010-.0029			59	
Dried	Composite of several brands:								
	1	Buffered; autoclaved	.0019		.0033				
	2	Buffered; autoclaved; chicken pancreas; average and range.	.0045 .0034-.0056	.006	.0053 .0040-.0065	.007		114	
Peanut:									
Roasted	1 sample, 1 pound	Takadiastase-papain; 40,000 [200,000]	.28 [.056]	.29 [.058]				25	
	Washington, D. C., market; 13 <i>S. faecalis</i> , 12 <i>L. casei</i> .	Buffered; autoclaved; chicken pancreas; average and range.	.0620 .0480-.0755	.063	.0511 .0440-.0650	.052		114	
Pear:									
Raw	Pera blanca (<i>Pirus communis</i>) Washington, D. C., market:	Takadiastase	<.001	<.005				50	
	1	Buffered; autoclaved	.0008		.0006				
	2	Buffered; autoclaved; chicken pancreas; average and range.	.0035	.024	.0023 .0021-.0025	.016			
	Washington, D. C., market	Buffered; autoclaved; chicken pancreas	.00319		.00276				
	Bartlett; Texas market; 4	Buffered; autoclaved; chicken pancreas; average and range.			.0018 .0013-.0023	.011		114	
Pecan	Washington, D. C., market; 5	do	.0344 .0240-.0430	.035	.0195 .0178-.0205	.020			
Pepper:									
Raw	Chile jalapeño (<i>Capsicum an- num</i> L.).	Takadiastase	.003	.037				50	
	Chile serrano (<i>Capsicum an- num</i> L. var. <i>acuminatum</i> Fing).	do	.003	.028					
	Washington, D. C., market:								
	2	Buffered; autoclaved; average and range	.0018 .0015-.0020		.0011 .0008-.0013				
	3 <i>S. faecalis</i> , 2 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	.0112 .0096-.0124	.190	.0098	.166			
	Sweet Bell; Texas market; 2	do			.0061 .0057-.0064	.100		114	
	Sweet Bell; Texas market; 6	do			.0037 .0026-.0044	.057			

Persimmon:									
Raw	Zapote negro (<i>Diospiros ebanaster</i>).	Takadiastase	.005	.029					50
Pigeonpea.									
See Bean and bean products, pigeonpea.									
Pineapple:									
Raw	<i>Bromelia ananas</i> L.	Rat growth method						.02	11
	Washington, D. C., market; 3	Buffered; autoclaved; average and range	.0014		.0016				114
			.0013-.0016		.0015-.0017				
		Buffered; autoclaved; chicken pancreas; average and range.	.0040	.029	.0059	.043			
	Washington, D. C., market	Buffered; autoclaved; chicken pancreas	.0025-.0048		.0040-.0093				
	Texas market; 4	Buffered; autoclaved; chicken pancreas; average and range.	.00167		.00183				
					.0008	.009			
					.0005-.0012				
Plantain banana:									
Raw	<i>Musa paradisiaca</i> L.; unripe	Buffered; autoclaved; takadiastase; chicken pancreas.			0				10
	do	do			0				
	<i>Musa paradisiaca</i> L.; half ripened.	do			0				
	do	do			.00014				
Plum:									
Red	Washington, D. C., market: 2	Buffered; autoclaved; average and range	.0009		.0005				114
			.0008-.0010		.0002-.0007				
	3	Buffered; autoclaved; chicken pancreas; average and range.	.0030	.017	.0029	.016			
	Santa Rosa; Texas market; 5	do	.0025-.0034		.0027-.0031				
					.0006	.005			
					.0003-.0011				
Yellow	Washington, D. C., market: 1 <i>S. faecalis</i> , 2 <i>L. casei</i>	Buffered; autoclaved; average and range	.0004		.0002				
					.0001-.0002				
	2 <i>S. faecalis</i> , 4 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	.0014	.012	.0010	.008			
					.0007-.0011				
Plum (Italian prune)	Texas market; 2	do			.0027	.014			
					.0026-.0027				
Pork:									
Bacon	1 sample, 2 specimens	Takadiastase-papain; 40,000 [200,000]	.060 [.012]	.077 [.0154]					25
	All visible fat removed; 1 sample, 12 specimens.	Takadiastase-papain; 40,000 [200,000]	.16 [.032]	.32 [.064]					
Brain:									
Raw	1 sample	Autolysis; 40,000 [200,000]		.068 [.0136]					130
	Dried, defatted								
Ham:							.45		58
Raw	1 sample, 2 specimens	Takadiastase-papain; 40,000 [200,000]	.058 [.0116]	.11 [.022]					25
	All visible fat removed; 1 sample.	Takadiastase-papain; 40,000 [200,000]	.12 [.024]	.36 [.072]					

* Numerals used in column 2 for Reference No. 114 refer to the number of subsamples per lot or to the number of determinations of special samples.

TABLE 10.—Compiled data on the folic acid content of foods—Continued

Item	Description of sample*	Preliminary treatment of sample; method; potency designation of impure standard (in italics)	Folic acid (mg./100 gm.)						Reference No.
			Microbiological assays					Other assays	
			<i>S. faecalis</i>		<i>L. casei</i>		<i>S. faecalis</i> or <i>L. casei</i> or both	Moist basis	
			Moist basis	Moisture-free basis	Moist basis	Moisture-free basis	Moist basis		
(1)	(2)	(3)	(4a)	(4b)	(5a)	(5b)	(6a)	(7a)	(8)
Pork—Continued Ham—Continued Raw—Continued	1 sample	No treatment.....	.0006		.003				76
		Autolysis.....	.007						
		pH 4 autoclaved 12 hours.....	.003		.005				
		0.1 N KOH autoclaved 1 hour.....	<.001		.002				
		2 N KOH autoclaved 30 minutes.....	<.001						
		Takadiastase.....	.015		.018				
		Chicken pancreas.....	.009		.009				
		Takadiastase.....	.009		.0078				
		do.....	.012		.0138				
		do.....	.0135		.0075				
Cured		do.....	.0067		.0056			103	
		do.....	.0088						
		Takadiastase; 40,000.....	.040						
		[200,000].....	[.008]					117	
Smoked	Washington, D. C., market; 2	Buffered; autoclaved; average and range.....	.0004		.0003			114	
		Buffered; autoclaved; chicken pancreas; average and range.....	.0003-.0004	.016	.0106	.033			
Heart	1 sample	Autolysis; 40,000.....	.0051		.0106			130	
		[200,000].....	.0040-.0061	.15	.0082-.0129				
Kidney	1 sample	Autolysis natural pH; 40,000.....	[.03]					24	
		[200,000].....	.0068						
		Takadiastase natural pH; 40,000.....	[.00136]						
		[200,000].....	.049						
		Papain natural pH; 40,000.....	[.0098]						
		[200,000].....	.021						
		Pepsin natural pH; 40,000.....	[.0042]						
		[200,000].....	.063						
		Trypsin natural pH; 40,000.....	[.00126]						
		[200,000].....	.010						
		Pancreatin natural pH; 40,000.....	[.002]						
		[200,000].....	.010						
		Autolysis natural pH; 40,000.....	[.002]						
		[200,000].....	.0017						
Takadiastase pH 4.0; 40,000.....	[.00034]								
[200,000].....	.020								
Malt diastase pH 4.5; 40,000.....	[.004]								
[200,000].....	.0065								
Kidney	1 sample	Autolysis; 40,000.....	[.0013]					130	
		[200,000].....	.24						

		Hog kidney	1.00		1.00				} 61	
		do.	.87		.84					
Liver:										
Raw	1 sample	Autolysis; 40,000 [200,000]		2.5 [.5]					} 130	
		Tadakiastase	.084							
		do.	.063						} 103	
	Texas A. and M. College Animal Husbandry; 2.	Buffered; autoclaved; chicken pancreas; average and range.			.2210 .2090-.2330	.691				
Dried, de-fatted							.82		} 58	
Loin	1 sample, 4 specimens	Takadiastase-papain; 40,000 [200,000]	.065 [.013]	.17 [.034]						
	All visible fat removed; 1 sample, 3 specimens.	Takadiastase-papain; 40,000 [200,000]	.084 [.0168]	.31 [.062]					} 25	
	All visible fat removed; 1 sample, 3 specimens.	Takadiastase-papain; 40,000 [200,000]	.14 [.028]	.47 [.094]						
		Takadiastase	.0069						} 103	
	Washington, D. C., market:									
	1	Buffered; autoclaved	.0003		.0002				} 114	
	3 <i>S. faecalis</i> , 2 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	.0016 .0015-.0018	.005	.0032	.010				
Lung	1 sample	Autolysis; 40,000 [200,000]		.055 [.011]						
Muscle:										
Raw	1 sample	Autolysis; 40,000 [200,000]		.28 [.056]					} 130	
		Takadiastase	Approx. .008	At least .016						
Dehydrated, canned										
	Plant A	do	.0024						} 123	
	Plant B	do	.0015							
	Plant C	do	.0011							
	Plant D	do	.0035							
	Plant A	do	.0022							
	Stored 20 weeks at 0° F	do	.0022							
	Stored 20 weeks at 120° F	do	.0019							
	Plant B	do	.0026							
	Stored 20 weeks at 0° F	do	.0021							
	Stored 20 weeks at 120° F	do	.0020							
	Plant C	do	.0030							
	Stored 20 weeks at 0° F	do	.0031							
	Stored 20 weeks at 120° F	do	.0036							
Sausage	Washington, D. C., market:									
	4 <i>S. faecalis</i> , 2 <i>L. casei</i>	Buffered; autoclaved; average and range	.0004 .0002-.0005		.0006 .0005-.0006					} 114
	9 <i>S. faecalis</i> , 7 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	.0093 .0057-.0136	.014	.0138 .0108-.0194	.021				
	Washington, D. C., market	Buffered; autoclaved; chicken pancreas	.00451		.00620					
Spleen	1 sample	Autolysis; 40,000 [200,000]		.085 [.017]					} 130	
Potato and various parts:										
Raw	1 sample, 1 specimen	Takadiastase-papain; 40,000 [200,000]	.14 [.028]	.63 [.126]					} 25	

* Numerals used in column 2 for Reference No. 114 refer to the number of subsamples per lot or to the number of determinations of special samples.

TABLE 10.—Compiled data on the folic acid content of foods—Continued

Item (1)	Description of sample* (2)	Preliminary treatment of sample; method; potency designation of impure standard (in italics) (3)	Folic acid (mg./100 gm.)						Moist basis (7a)	Reference No. (8)
			Microbiological assays					Other assays		
			<i>S. faecalis</i>		<i>L. casei</i>		<i>S. faecalis</i> or <i>L. casei</i> or both			
			Moist basis (4a)	Moisture- free basis (4b)	Moist basis (5a)	Moisture- free basis (5b)					Moist basis (6a)
Potato and various parts—Continued										
Raw—Continued										
	1 sample.....	Takadiastase-papain; 40,000.....	.100						26	
		[200,000].....	[.020]							
	1 sample.....	Takadiastase-papain; 40,000.....	.083						85	
		[200,000].....	[.0166]							
	1 assay.....	Takadiastase; 40,000.....	.103							
		[200,000].....	[.0206]							
		Takadiastase; rat liver; 40,000.....	.15							
		[200,000].....	[.03]							
		Takadiastase-papain; method a, tur- bidimetric.....			.046				100	
		Takadiastase-papain; method a, aci- dimetric.....			.048					
		Takadiastase-papain; method b, aci- dimetric.....			.048					
	Garden or retail sample.....	Takadiastase.....	.005						90	
	New, red.....	do.....	.023							
		Hog kidney.....	.043							
		Autolysis.....	.006							
	Old, red; 7 months storage.....	Takadiastase.....	.007							
		Hog kidney.....	.005							
	New, white.....	Takadiastase.....	.017						120	
		Hog kidney.....	.053							
		Autolysis.....	.004							
	Old, white; 7 months storage.....	Takadiastase.....	.004							
		Hog kidney.....	.004							
		Buffered; heated 45 minutes (abstract); chemical method.....						.26	8	
		Water extract; mild heat; chemical method.....			.040			.058	5	
	Green Mountain; New York: Whole calculated from peeled +peel.....	Buffered; autoclaved; chicken pancreas.....	[.0088]	[.045]	[.0114]	[.058]			114	
	Peeled, 3.....	Buffered; autoclaved; chicken pancreas; average and range.....	.0066	.037	.0081	.045				
		do.....	.0061-.0069		.0047-.0120					
	Peel, 2.....	do.....	.0148	.068	.0207	.095				
			.0142-.0154							
	Irish Cobbler, Maine: Whole calculated from peeled +peel.....	Buffered; autoclaved; chicken pancreas.....	[.0130]	[.065]	[.0135]	[.068]				

Peeled, 2	Buffered; autoclaved; chicken pancreas; average and range.	.0106 .0092-.0120	.056	.0116 .0080-.0152	.061		
Peel, 3 <i>S. faecalis</i> , 2 <i>L. casei</i>	do.	.0201 .0192-.0212	.093	.0193 .0163-.0223	.089		
Irish Cobbler; North Carolina: Whole calculated from peeled +peel.	{ Buffered; autoclaved	[.0037]		[.0036]			
Peeled:	{ Buffered; autoclaved; chicken pancreas	[.0065]	[.031]	[.0061]	[.029]		
2 <i>S. faecalis</i> , 3 <i>L. casei</i>	Buffered; autoclaved; average and range	.0027 .0026-.0027		.0025 .0022-.0027			
5 <i>S. faecalis</i> , 6 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	.0044 .0034-.0050	.021	.0037 .0035-.0042	.018		
Peel:							
2 <i>S. faecalis</i> , 3 <i>L. casei</i>	Buffered; autoclaved; average and range	.0069 .0061-.0076		.0073 .0065-.0080			
5 <i>S. faecalis</i> , 6 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	.0133 .0111-.0156	.064	.0138 .0110-.0195	.066		
Sebago; Alabama: Whole calculated from peeled +peel.	{ Buffered; autoclaved	[.0028]		[.0034]			
Peeled:	{ Buffered; autoclaved; chicken pancreas	[.0056]	[.029]	[.0078]	[.041]		
3	Buffered; autoclaved; average and range	.0022 .0015-.0032		.0026 .0016-.0035			
5	Buffered; autoclaved; chicken pancreas; average and range.	.0044 .0035-.0055	.022	.0061 .0042-.0084	.031		
Peel:							
3	Buffered; autoclaved; average and range	.0052 .0031-.0064		.0068 .0035-.0091			
5 <i>S. faecalis</i> , 4 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	.0106 .0069-.0142	.057	.0147 .0090-.0181	.079		
Sebago; South Carolina: Whole calculated from peeled +peel.	{ Buffered; autoclaved	[.0036]		[.0037]			
Peeled:	{ Buffered; autoclaved; chicken pancreas	[.0069]	[.034]	[.0076]	[.038]		
3 <i>S. faecalis</i> , 4 <i>L. casei</i>	Buffered; autoclaved; average and range	.0031 .0026-.0038		.0031 .0023-.0046			
5	Buffered; autoclaved; chicken pancreas; average and range.	.0053 .0085-.0069	.026	.0069 .0039-.0127	.034		
Peel:							
4	Buffered; autoclaved; average and range	.0059 .0049-.0071		.0069 .0053-.0080			
6 <i>S. faecalis</i> , 7 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	.0142 .0103-.0161	.071	.0115 .0071-.0180	.058		
Triumph; Alabama: Whole calculated from peeled +peel.	{ Buffered; autoclaved	[.0028]		[.0036]			
Peeled:	{ Buffered; autoclaved; chicken pancreas	[.0052]	[.028]	[.0076]	[.041]		
4 <i>S. faecalis</i> , 3 <i>L. casei</i>	Buffered; autoclaved; average and range	.0020 .0012-.0033		.0025 .0016-.0034			
5	Buffered; autoclaved; chicken pancreas; average and range.	.0042 .0025-.0064	.023	.0065 .0024-.0115	.036		
Peel:							
3	Buffered; autoclaved; average and range	.0062 .0046-.0077		.0081 .0057-.0100			
5	Buffered; autoclaved; chicken pancreas; average and range.	.0098 .0080-.0133	.050	.0124 .0082-.0153	.063		

TABLE 10.—Compiled data on the folic acid content of foods—Continued

Item	Description of sample*	Preliminary treatment of sample; method; potency designation of impure standard (in italics)	Folic acid (mg./100 gm.)						Reference No.	
			Microbiological assays					Other assays		
			<i>S. faecalis</i>		<i>L. casei</i>		<i>S. faecalis</i> or <i>L. casei</i> or both	Moist basis		
			Moist basis	Moisture-free basis	Moist basis	Moisture-free basis	Moist basis			
(1)	(2)	(3)	(4a)	(4b)	(5a)	(5b)	(6a)	(7a)	(8)	
Potatoes and various parts—Continued Raw—Continued	Triumph; South Carolina:									
	Whole calculated from peeled + peel.	Buffered; autoclaved	[.0031]		[.0038]					
		Buffered; autoclaved; chicken pancreas	[.0043]	[.022]	[.0054]	[.028]				
	Peeled:									
	4 <i>S. faecalis</i> , 3 <i>L. casei</i>	Buffered; autoclaved; average and range	.0022		.0028					
			.0013-.0034		.0019-.0043					
	6 <i>S. faecalis</i> , 7 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	.0034	.018	.0043	.023				
			.0025-.0043		.0023-.0062					
	Peel:									
	3	Buffered; autoclaved; average and range	.0072		.0087					
			.0049-.0098		.0042-.0116					
	5 <i>S. faecalis</i> , 6 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	.0086	.044	.0109	.056				
			.0054-.0119		.0053-.0156					
	White Rose; California:									
	Whole calculated from peeled + peel.	Buffered; autoclaved	[.0026]		[.0028]					
	Buffered; autoclaved; chicken pancreas	[.0073]	[.041]	[.0072]	[.041]					
Peeled:										
2	Buffered; autoclaved; average and range	.0021		.0023						
		.0013-.0028		.0017-.0029						
4 <i>S. faecalis</i> , 2 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	.0074	.040	.0065	.035					
		.0051-.0112								
Peel:										
2	Buffered; autoclaved; average and range	.0052		.0053						
		.0049-.0055		.0051-.0054						
3	Buffered; autoclaved; chicken pancreas; average and range.	.0091	.056	.0122	.074					
		.0055-.0110		.0078-.0173						
Idaho bakers; Texas market; 2	do	do		.0024	.010					
				.0023-.0024						
Prickly pear: Raw	Nopales (<i>Opuntia</i> sp.)	Takadiastase	.015	.300						
Prickly pear fruit	Tuna (<i>Opuntia</i> sp.)	do	.004	.032						
Prune: Dried	Composite of several brands:									
	2 <i>S. faecalis</i> , 3 <i>L. casei</i>	Buffered; autoclaved; average and range	.0040		.0030					
			.0036-.0043		.0026-.0036					
	4 <i>S. faecalis</i> , 6 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	.0060	.008	.0048	.007				
			.0052-.0065		.0043-.0054					

Prune, Italian. See Plum (Italian prune).								
Pulque	Takadiastase	.008	.615					} 50
	do.	.009	.825					
Pumpkin: Raw	High-quality sample	{ Autolysis .001 Takadiastase .002 Hog kidney .030						} 120
	Washington, D. C., market: 2	Buffered; autoclaved; average and range	{ .0050 .0037-.0063		.0042			
	3	Buffered; autoclaved; chicken pancreas; average and range.	{ .0093 .0083-.0101	.133	.0104 .0092-.0113	.149			} 114
	Texas market; 3	do.			.0051 .0046-.0058	.066		
Purslane: Raw	Verdolgas (<i>Portulaca oleracea</i> L.)	Takadiastase	.029	.310				} 50
Radish: Raw	Rábano	do.	.006	.108				} 90
	White; garden or retail sample	do.	.010		.011			
	Garden or greenhouse; 2 sam- ples.	Buffered; heated 3 minutes; hog kidney; average and range.	{ .013 .012-.013	.22 .21-.23	.011 .010-.012	.20 .18-.22		} 41
	Washington, D. C., market: 2	Buffered; autoclaved; average and range	{ .0028 .0022-.0034		.0026			
	4	Buffered; autoclaved; chicken pancreas; average and range.	{ .0036 .0031-.0040	.078	.0034 .0030-.0039	.074		} 114
	Washington, D. C., market	Buffered; autoclaved	.0054					
	do.	Buffered; autoclaved; takadiastase	.0074					
	do.	Buffered; autoclaved; hog kidney	.0085					
	Red Globe; Texas market; 2	do.	.0164		.00419			} 25
	do.	do.	.00385		.0103	.224		
	do.	Buffered; autoclaved; chicken pancreas; average and range.			.0093-.0112	.192		
	do.	do.			.0094			} 114
	do.	do.			.0089-.0099			
Raisin	1 sample, 1 pound	Takadiastase-papain; 40,000 [200,000]	.028 [.0056]	.037 [.0074]				} 25
	Seedless; composite of several brands: 2	Buffered; autoclaved; average and range	{ .0066 .0060-.0071		.0072			
	4 <i>S. faecalis</i> , 3 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	{ .0106 .0079-.0123	.013	.0068-.0076 .0106 .0090-.0135	.013		
Raspberry, red: Raw	Washington, D. C., market: 2	Buffered; autoclaved; average and range	{ .0035 .0034-.0035		.0028			} 114
	5 <i>S. faecalis</i> , 3 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	{ .0059 .0050-.0064	.043	.0023-.0033 .0051 .0041-.0056	.038		

* Numerals used in column 2 for Reference No. 114 refer to the number of subsamples per lot or to the number of determinations of special samples.

TABLE 10.—Compiled data on the folic acid content of foods—Continued

Item (1)	Description of sample* (2)	Preliminary treatment of sample; method; potency designation of impure standard (in italics) (3)	Folic acid (mg./100 gm.)						Moist basis (7a)	Reference No. (8)
			Microbiological assays					Moist basis (7a)		
			<i>S. faecalis</i>		<i>L. casei</i>		<i>S. faecalis</i> or <i>L. casei</i> or both (6a)			
			Moist basis (4a)	Moisture- free basis (4b)	Moist basis (5a)	Moisture- free basis (5b)				
Rhubarb: Raw	Washington, D. C., market: 1	Buffered; autoclaved	.0005						114	
	3 <i>S. faecalis</i> , 2 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	.0029 .0024-.0032	.052	.0014	.025				
	Washington, D. C., market	Buffered; autoclaved	.0019							
		Buffered; autoclaved; takadiastase	.0022							
		Buffered; autoclaved; hog kidney	.0050							
		Buffered; autoclaved; chicken pancreas	.0091							
	Texas market; 3	Buffered; autoclaved; chicken pancreas; average and range.			.0035 .0032-.0042	.041				
Rice: Rough	Arkansas Experiment Station: 2	Buffered; autoclaved; average and range	.0159 .0118-.0200		.0165 .0110-.0220					
	3 <i>S. faecalis</i> , 2 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	.0336 .0278-.0378	.035	.0290	.031				
	Louisiana Experiment Station: 3	Buffered; autoclaved; average and range	.0199 .0181-.0217		.0149 .0132-.0182					
	5	Buffered; autoclaved; chicken pancreas; average and range.	.0409 .0381-.0430	.043	.0298 .0265-.0324	.031				
		Husked (<i>Oriza sativa</i> L.); Cuban market.	Buffered; autoclaved; takadiastase; chicken pancreas.			0				10
	Arkansas Experiment Station: 2	Buffered; autoclaved; average and range	.0056 .0055-.0058		.0113 .0108-.0118					
3	Buffered; autoclaved; chicken pancreas; average and range.	.0239 .0237-.0240	.025	.0209	.022					
Louisiana Experiment Station: 1	Buffered; autoclaved	.0218		.0315						
2	Buffered; autoclaved; chicken pancreas; average and range.	.0386 .0372-.0400	.041	.0333 .0310-.0355	.035					
Louisiana Experiment Station: 3 <i>S. faecalis</i> , 2 <i>L. casei</i>	Buffered; autoclaved; average and range	.0083 .0067-.0094		.0088 .0086-.0089						
6 <i>S. faecalis</i> , 5 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	.0281 .0210-.0378	.030	.0234 .0172-.0368	.025					
Louisiana Experiment Station: 1	Buffered; autoclaved	.0058		.0078						
2	Buffered; autoclaved; chicken pancreas; average and range.	.0175 .0161-.0189	.018	.0159 .0140-.0178	.017					

	Washington, D. C., market: 3	Buffered; autoclaved; average and range	.0088 ----- .0081-. 0091		.0056 ----- .0051-. 0059			
	3 <i>S. faecalis</i> , 4 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	.0186 ----- .0180-. 0196	.021	.0113 ----- .0108-. 0120	.012		
	Washington, D. C., market; 2	Buffered; autoclaved	.0094 ----- .0199	.022	.0066 ----- .0126	.014		
		Buffered; autoclaved; chicken pancreas; average and range.	.0190-. 0208		.0122-. 0130			
Parboiled	Avorio, Riso raffinato, var. Originario	Acetate buffer; autoclaved 1 hour			.0053			
	Avorio, Riso raffinato, var. "77"	do			.0071			99
	Avorio, Riso raffinato, var. Maratelli	do			.0047			
	Avorio	Water; steamed; range			.007-. 008			38
Milled		Takadiastase-papain; 40,000	.087					26
		[200,000]	[.0174]					
	Polished	Rat growth method					.02	11
		N H ₂ SO ₄ ; autoclaved 1 hour			0			
		0.01 N H ₂ SO ₄ ; autoclaved 1 hour			.0031			
		Acetate buffer pH 4.5; autoclaved 1 hour.			.0052			
	Riso normale	Water; autoclaved 1 hour			.0052			99
		0.01 N NaOH autoclaved 1 hour			.0057			
		0.01 N KOH autoclaved 1 hour			.0045			
	Riso raffinato, var. Originario	Acetate buffer; autoclaved 1 hour			.0048			
	Riso raffinato, var. "77"	do			.0067			
	Riso raffinato, var. Maratelli	do			.0049			
	Normal processing	Water; steamed; range			.003-. 004			38
	Arkansas Experiment Station: 3	Buffered; autoclaved; average and range	.0056 ----- .0035-. 0067		.0073 ----- .0057-. 0081			114
	5 <i>S. faecalis</i> , 4 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	.0141 ----- .0094-. 0181	.015	.0141 ----- .0103-. 0180	.015		
Breakfast cereal	1 sample	Takadiastase-papain; 40,000	.016	.017				25
	do	[200,000]	[.0032]	[.0034]				90
	3 samples	Buffered; autoclaved; takadiastase	.011		.010			41
		Buffered; autoclaved; hog kidney; average and range.	.009 ----- .006-. 012		.008-. 011			
	Washington, D. C., market: 2	Buffered; autoclaved; average and range	.0056 ----- .0055-. 0057		.0034 ----- .0033-. 0035			114
	4	Buffered; autoclaved; chicken pancreas; average and range.	.0094 ----- .0063-. 0127	.010	.0059 ----- .0058-. 0060	.006		
		N H ₂ SO ₄ ; autoclaved 1 hour			0			
		0.01 N H ₂ SO ₄ ; autoclaved 1 hour			.034			
		Acetate buffer pH 4.5; autoclaved 1 hour.			.048			
Bran	Pula, normale	Water; autoclaved 1 hour			.044			99
		0.01 N NaOH; autoclaved 1 hour			.0153			
		0.01 N KOH; autoclaved 1 hour			.0127			
	Pula, normale, var. Originario	Acetate buffer pH 4.5; autoclaved 1 hour.			.045			
	Pula, Avorio (parboiled), var. Originario.	do			.0170			
	Pula, normale, var. "77"	do			.045			

* Numerals used in column 2 for Reference No. 114 refer to the number of subsamples per lot or to the number of determinations of special samples.

TABLE 10.—Compiled data on the folic acid content of foods—Continued

Item (1)	Description of sample* (2)	Preliminary treatment of sample; method; potency designation of impure standard (in italics) (3)	Folic acid (mg./100 gm.)						Reference No. (8)
			Microbiological assays					Other assays	
			<i>S. faecalis</i>		<i>L. casei</i>		<i>S. faecalis</i> or <i>L. casei</i> or both	Moist basis (7a)	
			Moist basis (4a)	Moisture- free basis (4b)	Moist basis (5a)	Moisture- free basis (5b)	Moist basis (6a)		
Rice—Continued									
Bran—Continued									
	Pula, Avorio (parboiled), var. "77."	Acetate buffer pH 4.5; autoclaved 1 hour—Continued			.0448			99	
Germ	Gemma, normale, var. Originario	do			.081				
Polishings	Farinaccio, normale, var. Originario.	do			.039				
	Farinaccio, Avorio (parboiled), var. Originario.	do			.0157			38	
	Normal processing	Water; steamed; range			.026-.040				
Rutabaga:	Avorio (parboiled)	Water; steamed			.012				
Raw	Washington, D. C., market: 3 <i>S. faecalis</i> , 2 <i>L. casei</i>	Buffered; autoclaved; average and range	.0031		.0035			114	
	6 <i>S. faecalis</i> , 5 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	.0030-.0031 .0066 .0042-.0094	.057	.0034-.0035 .0069 .0048-.0100	.060			
	Texas market; 2	do			.0030 .0027-.0032	.022			
Rye:									
Whole grain	Ground feedstuff; 3 tests	Chick-growth method; average and range					.17 .04-.20	75	
	Ground feedstuff; 5 samples	Buffered; autoclaved; hog kidney; average and range.	.073 .065-.094		.045 .041-.057			41	
	1948 crop; composite U. S. sample: 2	Buffered; autoclaved; average and range	.0123 .0098-.0147		.0153 .0106-.0200			114	
	3	Buffered; autoclaved; chicken pancreas; average and range.	.0352 .0270-.0442 .0197 .0165-.0215	.040	.0336 .0304-.0365 .0163 .0161-.0164	.038			
Flour	Washington, D. C., market; 3 <i>S. faecalis</i> , 2 <i>L. casei</i>	do		.022		.018			
Salmon:									
Raw	1 sample, 1 specimen	Takadiastase-papain; 40,000 [200,000]	.087 [.0174]	.31 [.062]				25	
Canned	Drained solids; 10 samples, 60 cans.	Takadiastase; average and range	.0026 .0010-.0044		.0069 .0053-.0102			59	
	Red (<i>Oncorhynchus</i>); drained solids; 1 sample, 12 cans.	Hog pancreas			.0005			89	
Sapodilla:									
Raw	Mesple (<i>Sapota achras</i> Mill.)	Rat growth method					<.02	11	

97	Sardine:							
	Canned	Atlantic (<i>Clupea harengus</i>); drained solids; 1 sample, 12 cans:						
		Sample No. 1	Hog pancreas			.0018		
		Duplicate	do.			.0010		
		Sample No. 2	do.			.0019		
		Duplicate	do.			.0012		
		Sample No. 3	do.			.0014		
		Duplicate	do.			.0010		
		Sample No. 4	do.			.0019		
		Duplicate	do.			.0019		
		Sample No. 5	do.			.0020		
		Duplicate	do.			.0012		
		Sample No. 6	do.			.0027		
		Duplicate	do.			.0023		
		Sample No. 7	do.			.0021		
		Duplicate	do.			.0012		
		Sample No. 8	do.			.0019		
		Duplicate	do.			.0008		
		Pacific (<i>Sardinops caerulea</i>):						
		Canned in tomato sauce; total contents, 12 cans.	Hog pancreas			.0008		
		Canned in brine; drained solids, 12 cans.	do.			.0005		
		Sauerkraut:						
		Raw	1 sample	Takadiastase-papain; 40,000 [200,000]	.0186 [.00372]			
		Seepweed:						
		Raw	Romeritos (<i>Dondia</i> sp.)	Takadiastase	.093	.860		
	Sirup, cane:							
	Unblended	Commercial; table grade	do.	.0010				
	Sorghum:							
	Whole grain	White kafir; 1948 crop; com- posite U. S. sample:						
		3	Buffered; autoclaved; average and range	.0055 .0020-.0084		.0052 .0035-.0064		
		5	Buffered; autoclaved; chicken pancreas; average and range.	.0226 .0177-.0263	.025	.0183 .0153-.0212	.021	
		Yellow milo; 1948 crop; com- posite U. S. sample:						
		3	Buffered; autoclaved; average and range	.0122 .0071-.0151		.0103 .0085-.0125		
		4	Buffered; autoclaved; chicken pancreas; average and range.	.0223 .0177-.0250	.025	.0214 .0181-.0260	.024	
	Soybeans. See Bean and bean prod- ucts, soy- beans.							
	Spinach:							
	Raw	2 samples, 2 pounds	Takadiastase-papain; 40,000; average [200,000] 40,000; range [200,000]	.24 [.048] .17-.30 [.034-.06]	2.3 [.46]			

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TABLE 10.—Compiled data on the folic acid content of foods—Continued

Item (1)	Description of sample* (2)	Preliminary treatment of sample; method; potency designation of impure standard (in italics) (3)	Folic acid (mg./100 gm.)						Reference No. (8)
			Microbiological assays					Other assays	
			<i>S. faecalis</i>		<i>L. casei</i>		<i>S. faecalis</i> or <i>L. casei</i> or both	Moist basis (7a)	
			Moist basis (4a)	Moisture- free basis (4b)	Moist basis (5a)	Moisture- free basis (5b)	Moist basis (6a)		
Spinach—Continued Raw—Continued 86	1 sample.....	Autolysis; 40,000.....	.19					24	
		[200,000].....	[.038]						
		Takadiastase; 40,000.....	.30						
	Autoclaved; 40,000.....	[200,000].....	[.06]						
		.....	.13				
		[200,000].....	[.026]						
	Espinaca (<i>Spinacia oleracea</i> L.) High-quality sample.....	Takadiastase.....	.058	.517				50	
		do.....	.053						
	Garden or retail sample.....	Hog kidney.....	.085					120	
		Water extract.....	.024		.033				
		Acid hydrolysis.....	.032		.025				
		Alkaline hydrolysis.....	.021		.022				
	Garden or retail; 3 samples.....	Takadiastase.....	.076		.080			90	
		Takadiastase; average and range.....	.082		.107				
	Garden or retail sample.....	Hog kidney.....	.076-.089		.080-.114			90	
		do.....		.90		.95			
	Stored 32 hours at room temperature.....	do.....		.68		.70		90	
		do.....			1.00	1.01			
	Stored 5 days in refrigerator.....	do.....			1.15	1.08		90	
		do.....							
	1 sample.....	Buffered; heated 3 minutes; hog kidney.....	.270					91	
		Takadiastase.....	.073			.110			
	1 sample.....	Pancreatin.....	.032			.083		91	
		Hog kidney.....	.110			.120			
Takadiastase; hog kidney.....		.120			.130				
Pancreatin; hog kidney.....		.089			.110				
1 sample.....	Buffered; heated 3 minutes; incubated pH 4.5.....	.018					91		
	Buffered; heated 3 minutes; takadia- stase.....	.018							
	Incubated pH 4.5.....	.078							
Garden or greenhouse; 3 <i>S.</i> <i>faecalis</i> , 2 <i>L. casei</i> samples.....	Takadiastase.....	.095					41		
	Takadiastase (corrected for conjugate content of takadiastase).....	(.083)							
Garden or greenhouse sample.....	Buffered; heated 3 minutes; hog kid- ney; average and range.....	.28	2.23	.225	1.90		41		
	do.....	.26-.30	1.90-2.70	.22-.23	1.60-2.20				
Stored in a wax bag: 1 day at room temperature..... 2 days at room temperature..... 3 days at room temperature..... 1 week in refrigerator.....	Buffered; heated 3 minutes; hog kidney.....		2.700		2.200		41		
	do.....		2.000		1.900				
	do.....		2.000		1.700				
	do.....		1.600		1.400				
	do.....		2.000		2.100				

	2 weeks in refrigerator	do		2. 700		1. 800		
	1 week in crushed ice	do		2. 200		2. 300		
	2 weeks in crushed ice	do		3. 100		2. 100		
		Buffered; heated 45 minutes (abstract); chemical method.	. 42					. 58
	Washington, D. C., market:							
	1	Buffered; autoclaved	. 1010			. 1100		
	3	Buffered; autoclaved; chicken pancreas; average and range.	. 0943	1. 407		. 1053	1. 572	
		Buffered; autoclaved; average and range	. 0928-. 0959			. 0938-. 1120		
	Washington, D. C., market; 2	Buffered; autoclaved; average and range	. 0360			. 0310		
		Buffered; autoclaved; chicken pancreas; average.	. 0654	1. 055		. 0300-. 0320		
		Buffered; autoclaved; average and range	. 0344			. 0574	. 926	
	Washington, D. C., market; 4	Buffered; autoclaved; average and range	. 0257-. 0424			. 0330		
		Buffered; autoclaved; chicken pancreas; average and range.	. 0482	. 595		. 0261-. 0432		
	Texas market; 2	do	. 0438-. 0557			. 0486	. 600	
	Bloomsdale; Texas market; 2	do				. 0458-. 0533		
	do	do				. 0815	1. 181	
						. 0786-. 0845		
						. 1145	1. 363	
						. 1120-. 1170		
						. 0522	. 735	
						. 0498-. 0546		
Canned	Solid and liquid; 10 samples, 60 cans.	Takadiastase; average and range.	. 0074			. 0207		
			. 0040-. 0165			. 011-. 051		
	Brand 1	Buffered; heated 3 minutes; hog kidney; method a.	. 093			. 084		
		Buffered; heated 3 minutes; hog kidney; method b.				. 082		
	Brand 2	Buffered; heated 3 minutes; hog kidney; method a.	. 043			. 041		
		Buffered; heated 3 minutes; hog kidney; method b.				. 040		
	Brand 1	Buffered; heated 3 minutes; hog kidney	. 093	1. 340		. 084	1. 210	
	do	do	. 092	1. 240		. 083	1. 120	
	Brand 2	do	. 043	. 620		. 041	. 590	
	Brand 3	do	. 012	. 190		. 012	. 190	
	Brand 4	do	. 051	. 535				
	Brand 5	do	. 093	1. 110				
	Solid and liquid; initial 2 samples, 2 cans.	Takadiastase; average					. 0074	
	Stored 2 months at 70° F.	do					. 013	
	Stored 2 months at 90° F.	do					. 009	
	Stored 2 months at 100° F.	do					. 014	
	Stored 4 months at 70° F.	do					. 024	
	Stored 4 months at 90° F.	do					. 021	
	Stored 4 months at 100° F.	do					. 016	
	Stored 6 months at 70° F.	do					. 017	
	Stored 6 months at 90° F.	do					. 014	
	Stored 12 months at 100° F.	do					. 009	
Dried	1 sample	Untreated	. 242					
		Chicken pancreas	. 615					
		Hog kidney	. 705					
		Chicken pancreas; hog kidney	. 925					

* Numerals used in column 2 for Reference No. 114 refer to the number of subsamples per lot or to the number of determinations of special samples.

TABLE 10.—Compiled data on the folic acid content of foods—Continued

Item (1)	Description of sample* (2)	Preliminary treatment of sample; method; potency designation of impure standard (in italics) (3)	Folic acid (mg./100 gm.)					Moist basis (7a)	Reference No. (8)
			Microbiological assays						
			<i>S. faecalis</i>		<i>L. casei</i>		<i>S. faecalis</i> or <i>L. casei</i> or both		
			Moist basis (4a)	Moisture- free basis (4b)	Moist basis (5a)	Moisture- free basis (5b)	Moist basis (6a)		
Spinach—Continued Dried—Continued	1947 A.O.A.C. collaborative assay.	No enzyme treatment; specified method; average and range.			.659 .426-1.05				43
		Buffered; autoclaved; chicken pancreas; specified method, average and range.			1.289 .78-1.70				
		No enzyme treatment; other than specified method; average and range.					.652 .33-1.21		
		Other treatments or other than specified method; average and range.					1.186 .32-1.725		
		Chick growth method; 2 laboratories						1.1, 1.6	
		Chick growth method; 4 laboratories; average and range.						1.30	
		Chick hematocrit method; 1 laboratory						.33-1.86	
		Chick hemoglobin method; 1 laboratory						1.69	
		Microbiological and chick assays						.53	
							1.7	Checked microbiol.	
Spinach, New Zealand: Raw	Standard sample; 56 <i>S. faecalis</i> , 55 <i>L. casei</i> .	Buffered; autoclaved; chicken pancreas; average and range.	1.097 .820-1.390	1.124	1.060 .860-1.390	1.086			114
		Water extract	.090		.095				
		Takadiastase	.180		.150				
		Hog kidney	.170		.155				
		Takadiastase	.190		.190				
		Hog kidney		1.65		1.50			
		do		.46		.54			
		do		1.25		1.20			
		do		1.42		1.58			
		do		.082					
Squash: Raw	Acorn; high-quality sample	Takadiastase	.006						120
		Hog kidney	.006						
		Buffered; autoclaved; average and range	.0099 .0092-.0109		.0104 .0097-.0112				
		Buffered; autoclaved; chicken pancreas; average and range.	.0212 .0194-.0229	.175	.0197 .0183-.0211	.163			
		do			.0136 .0129-.0145	.095			
		Acorn; Washington, D. C., market; 3							
		2							
		Acorn; Texas market; 3							

Cushaw or kershaw; Texas market; 2.	do			.0021	.042			
Danish; Texas market; 2	do			.0019-.0022				114
				.0043	.056			
Danish; Texas market; 4	do			.0040-.0045				
				.0143	.204			
Patty Pan; Texas market; 3	do			.0123-.0163				
				.0186	.344			
Patty Pan; Texas market; 2	do			.0176-.0195				
				.0090	.143			
				.0087-.0093				
White; high-quality sample	Takadiastase	.013						
	Hog kidney	.037						120
Yellow Crookneck; high-quality sample.	Takadiastase	.057						
	Hog kidney	.031						
Yellow Crookneck; Texas market; 3.	Buffered; autoclaved; chicken pancreas; average and range.			.0073	.101			
				.0065-.0078				
Yellow Crookneck; Texas market; 4.	do			.0159	.215			
				.0108-.0189				
Yellow Crookneck; Washington, D. C., market:								
1	Buffered; autoclaved	.0054		.0045				
2	Buffered; autoclaved; chicken pancreas; average and range.	.0135	.190	.0096	.135			
				.0094-.0098				114
				.00932				
Yellow Crookneck; Washington, D. C., market.	Buffered; autoclaved; chicken pancreas	.0122						
Caserta; Texas A. and M. College Farm; 2.	Buffered; autoclaved; chicken pancreas; average and range.			.0110	.200			
				.0099-.0120				
Early prolific straight neck; Texas A. and M. College Farm; 2.	do			.0165	.250			
				.0152-.0178				
Patty Pan; Texas A. and M. College Farm; 3.	do			.0239	.314			
				.0148-.0304				
Zucchini black; Texas A. and M. College Farm; 2.	do			.0108	.216			
				.0099-.0116				
Zucchini; high-quality sample	Autolysis	.009						120
	Takadiastase	.004						
	Hog kidney	.038						
Calabacitas (<i>Cucurbita mexicana</i> L.).	Takadiastase	.020	.233					
Squash flower	do	.020	.295					50
Squash seed	do	.140	.150					
Strawberry:								
Raw	Takadiastase-papain; 40,000 [200,000]	.023 [.0046]	.23 [.046]					25
Washington, D. C., market:								
3	Buffered; autoclaved; average and range	.0018		.0014				
				.0012-.0016				
4	Buffered; autoclaved; chicken pancreas; average and range.	.0051	.063	.0046	.057			
				.0033-.0073				
	Buffered; autoclaved	.0038						
Washington, D. C., market	Buffered; autoclaved; takadiastase	.0047						114
	Buffered; autoclaved; hog kidney	.0088						
	Buffered; autoclaved; chicken pancreas	.0085						
do	do	.00425		.00394				
Ranger; Texas A. and M. College Farm; 2.	Buffered; autoclaved; chicken pancreas; average and range.			.0061	.061			
				.0057-.0065				

* Numerals used in column 2 for Reference No. 114 refer to the number of subsamples per lot or to the number of determinations of special samples.

TABLE 10.—Compiled data on the folic acid content of foods—Continued

Item (1)	Description of sample* (2)	Preliminary treatment of sample; method; potency designation of impure standard (in italics) (3)	Folic acid (mg./100 gm.)						Reference No. (8)
			Microbiological assays					Other assays	
			<i>S. faecalis</i>		<i>L. casei</i>		<i>S. faecalis</i> or <i>L. casei</i> or both		
			Moist basis (4a)	Moisture- free basis (4b)	Moist basis (5a)	Moisture- free basis (5b)	Moist basis (6a)	Moist basis (7a)	
Sweetpotato:									
Raw	2 samples, 4 specimens	Takadiastase-papain; 40,000; average [200,000]	.067 [.0134]	.23 [.046]					25
	Yellow (<i>Ipomoea batata</i> L.); Cuban market.	Buffered; autoclaved; takadiastase; chicken pancreas.			0				10
	do.	do.			.00016				
	do.	do.			.00039				
	High-quality sample	Autolysis	.004						120
		Takadiastase	0						
		Hog kidney	.035						
	Puerto Rican; Texas market; 2.	Buffered; autoclaved; chicken pancreas; average and range.			.0053	.018			
	Puerto Rican; Texas market; 3.	do.			.0049-.0057				
					.0191	.064			
					.0141-.0257				
Tangerine:									
Raw	Washington, D. C., market:								
	1.	Buffered; autoclaved	.0012		.0014				114
	2.	Buffered; autoclaved; chicken pancreas; average and range.	.0043	.038	.0074	.066			
			.0041-.0044		.0069-.0078				
	Washington, D. C., market	Buffered; autoclaved; chicken pancreas.	.00480		.00619				
Tangerine juice:									
Raw, sweetened.	700 field boxes; plant A	Autoclaved 1 hour pH 7.2			.0012				
Canned, sweetened.	700 field boxes; plant A	do.			.0018				67
Tomato:									
Raw:									
Red	2 samples, 6 specimens	Takadiastase-papain; 40,000; average [200,000]	.075 [.015]	1.3 [.26]					25
		40,000; range [200,000]	.040-.11						
			[.008-.022]						
	1 sample	Takadiastase-papain; method a, turbidimetric.			.036				100
		Takadiastase-papain; method a, acidimetric.			.037				
		Takadiastase-papain; method b, acidimetric.			.035				
	Jitomate (<i>Lycopersicum esculentum</i> L.)	Takadiastase	.011	.118					50

TABLE 10.—Compiled data on the folic acid content of foods—Continued

(1)	(2)	(3)	Folic acid (mg./100 gm.)					(8)	
			Microbiological assays				Other assays		
			<i>S. faecalis</i>		<i>L. casei</i>		<i>S. faecalis</i> or <i>L. casei</i> or both		Moist basis
			Moist basis (4a)	Moisture- free basis (4b)	Moist basis (5a)	Moisture- free basis (5b)	Moist basis (6a)		Moist basis (7a)
Turkey:									
Raw	Crosscut steaks; Virginia:	Buffered; autoclaved	.0039		.0035				
	1	Buffered; autoclaved; chicken pancreas;	.0046	.013	.0034	.010			
	2 <i>S. faecalis</i> , 3 <i>L. casei</i>	average and range.	.0045-.0047		.0032-.0035				
	Crosscut steaks; Virginia:	Buffered; autoclaved; average and range	.0123		.0083				
	2	Buffered; autoclaved; chicken pancreas;	.0121-.0125		.0070-.0095				
	3	average and range.	.0143	.037	.0101	.026			
	Steaks, light meat; Virginia:	Buffered; autoclaved; average and range	.0141-.0149		.0100-.0105				
	1	Buffered; autoclaved	.0052		.0039				
	2	Buffered; autoclaved; chicken pancreas;	.0059	.021	.0044	.015			
		average.							
	Texas market; 2	Buffered; autoclaved; chicken pancreas;			.0103	.040			
		average and range.			.0101-.0105				
	Turnip:								
Raw	1 sample, 7 specimens	Takadiastase-papain; 40,000	.026	.33					
		[200,000]	[.0052]	[.066]					
	1 sample	Takadiastase-papain; 40,000	.114						
		[200,000]	[.0228]						
	1 sample	Takadiastase-papain; 40,000	.050						
		[200,000]	[.010]						
	Washington, D. C., market:	Buffered; autoclaved	.0020						
	1	Buffered; autoclaved; chicken pancreas;	.0047	.053	.0039	.044			
	2 <i>S. faecalis</i> , 3 <i>L. casei</i>	average and range.	.0045-.0049		.0035-.0042				
	Washington, D. C., market	Buffered; autoclaved; chicken pancreas	.00381		.00332				
	Turnip greens:								
Raw	Immature; Maryland farm:	Buffered; autoclaved	.0094		.0102				
	1	Buffered; autoclaved; chicken pancreas;	.0422	.767	.0255	.464			
	2	average and range.	.0408-.0436						
	Mature; Washington, D. C.,	Buffered; autoclaved; average and range	.0343		.0439				
	market:	Buffered; autoclaved; chicken pancreas;	.0336-.0350		.0430-.0447				
	2	average and range.	.0636	.848	.0695	.927			
	4	average and range.	.0440-.0845		.0534-.0826				
	Washington, D. C., market	Buffered; autoclaved; chicken pancreas	.0472		.0529				
	Texas A. and M. College Farm;	Buffered; autoclaved; chicken pancreas;			.0948	.878			
	2	average and range.			.0939-.0956				
	do	do			.0867	1.097			
					.0828-.0905				

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Dehydrated	1949 A.O.A.C. collaborative assay.	Buffered; autoclaved; chicken pancreas; specified method; average and range.	.593		.6206				45
		Buffered; autoclaved; chicken pancreas or other treatment; other than specified method; average and range.	.404- .81 .529 .143- .674		.425- .788 .627 .42- .83				
	Special sample; 2	Chick growth method; 1 laboratory Chick blood method; 1 laboratory						1.43 1.36	114
		Buffered; autoclaved; chicken pancreas; average.		.645		.667			
Veal:									
Chop	1 sample, 6 specimens	Takadiastase-papain; 40,000	.092	.29					25
		[200,000]	[.0184]	[.058]					
	All visible fat removed; 1 sample, 3 specimens.	Takadiastase-papain; 40,000	.17	.61					
		[200,000]	[.034]	[.122]					
		Takadiastase	.031		.022				
		do	.014		.013				
Flank		do	.021		.016				
Heart		do	.013						
		do	.012						
Kidney		do	.031		.045				
		do	.036		.047				
Leg		do	.025		.018				
		do	.029						
		do	.033		.018				
		do	.021		.013				
Liver		do	.040		.051				
		do	.052		.051				
		do	.039		.048				
		do	.039		.048				
Shoulder		do	.026		.017				
		do	.026		.018				
		do	.016		.012				
		do	.015		.014				
Stew meat	Washington, D. C., market:								
	2	Buffered; autoclaved; average and range	.0025		.0033				
			.0017- .0032		.0029- .0036				
	3	Buffered; autoclaved; chicken pancreas; average and range.	.0050	.018	.0043	.015			
			.0041- .0069		.0031- .0064				
	Washington, D. C., market	Buffered; autoclaved; chicken pancreas	.00396		.00268				
Walnut	Washington, D. C., market; 5	Buffered; autoclaved; chicken pancreas; average and range.	.0782	.081	.0761	.079			
			.0693- .0883		.0725- .0800				
Water cress:									
Raw	Crezón (Berro) (<i>Nasturtium aquaticum</i> L.).	Takadiastase	.049	.502					
	Texas market; 2	Buffered; autoclaved; chicken pancreas; average and range.			.0476	.898			
					.0433- .0519				
Watermelon	1 sample, 1 specimen	Takadiastase-papain; 40,000	.15	1.5					
		[200,000]	[.03]	[.3]					
		Buffered; heated 45 minutes (abstract); chemical method.					.09		
	Washington, D. C., market:								
	3 <i>S. faecalis</i> , 4 <i>L. casei</i>	Buffered; autoclaved; average and range	.0003		.0004				
			.0002- .0005		.0001- .0005				
	5	Buffered; autoclaved; chicken pancreas; average and range.	.0007	.008	.0007	.008			
			.0006- .0008		.0005- .0008				
	Black Diamond; Texas A. and M. College Farm; 3.	do			.0003	.003			
					.0002- .0004				

* Numerals used in column 2 for Reference No. 114 refer to the number of subsamples per lot or to the number of determinations of special samples.

TABLE 10.—Compiled data on the folic acid content of foods—Continued

Item (1)	Description of sample* (2)	Preliminary treatment of sample; method; potency designation of impure standard (in italics) (3)	Folic acid (mg./100 gm.)						Reference No. (8)
			Microbiological assays					Other assays Moist basis (7a)	
			<i>S. faecalis</i>		<i>L. casei</i>		<i>S. faecalis</i> or <i>L. casei</i> or both Moist basis (6a)		
			Moist basis (4a)	Moisture- free basis (4b)	Moist basis (5a)	Moisture- free basis (5b)			
Watermelon—	Continued Yellow Desert King; Texas A. and M. College Farm; 2.	Buffered; autoclaved; chicken pancreas; average and range—Continued.			.0006 .0005-.0006	.007		114 8	
Whale liver—		Takadiastase or other enzyme (ab- stract); chemical method.					4.68		
Wheat and wheat products: Whole grain.		Takadiastase-papain; 3, 100 [200, 000]		2.80 [.0434]				20	
	Whole wheat; 1 sample, 1 pound.	Takadiastase-papain; 40, 000 [200, 000]	.19 [.038]	.20 [.04]					25
	Whole wheat; 4 assays.	Takadiastase; 40, 000; range [200, 000]	.05-.13 [.01-.026]					85	
		Takadiastase; rat liver; 40, 000; range [200, 000]	.10-.17 [.02-.034]						
		No treatment	.030	.043				76	
		pH 4 autoclaved 12 hours	.022	.024					
		0.1 N KOH; autoclaved 1 hour	.010	.020					
		2 N KOH; autoclaved 30 minutes	.010	.020					
		Takadiastase	.055	.090					
		Chicken pancreas	.020	.042					
		Buffered; heated 45 minutes (abstract); chemical method.	.60				.80	8	
	2 samples	Hog kidney	Trace					61	
	Trigo Pc Son (<i>Triticum vulgare</i> L.)	Takadiastase	.061	.067				50	
	Trigo C (<i>Triticum vulgare</i> L.)	do	.037	.041					
	Feedstuff; 3 tests	Chick growth method; average and range					.04 .00-.08	75	
Feedstuff; 6 samples	Buffered; autoclaved; hog kidney; aver- age and range.	.062 .053-.068		.055 .047-.060			41		
1948 crop; composite U. S. sam- ple: Durum: 1 <i>S. faecalis</i> , 2 <i>L. casei</i>	Buffered; autoclaved; average and range	.0302		.0135 .0134-.0135			7		
7	Buffered; autoclaved; chicken pancreas; average and range.	.0504 .0350-.0633	.056	.0270 .0165-.0356	.030				
Hard red spring: 1 <i>S. faecalis</i> , 2 <i>L. casei</i>	Buffered; autoclaved; average and range	.0306		.0144 .0130-.0157			7		
7	Buffered; autoclaved; chicken pancreas; average and range.	.0511 .0368-.0650	.056	.0408 .0273-.0530	.045				

Flour	Hard red winter: 2 <i>S. faecalis</i> , 3 <i>L. casei</i>	Buffered; autoclaved; average and range	.0142 .0127-.0157	-----	.0088 .0063-.0102	-----	-----	-----	} 114				
	7 <i>S. faecalis</i> , 6 <i>L. casei</i>	Buffered; autoclaved; chicken pancreas; average and range.	.0397 .0350-.0443	.044	.0356 .0295-.0447	.040	-----	-----					
	Red durum: 2.....	Buffered; autoclaved; average and range	.0266 .0182-.0350	-----	.0183 .0085-.0281	-----	-----	-----					
	6.....	Buffered; autoclaved; chicken pancreas; average and range.	.0526 .0462-.0603	.057	.0314 .0267-.0370	.034	-----	-----					
	Soft red winter: 2 <i>S. faecalis</i> , 3 <i>L. casei</i>	Buffered; autoclaved; average and range	.0169 .0164-.0173	-----	.0079 .0045-.0109	-----	-----	-----					
	7.....	Buffered; autoclaved; chicken pancreas; average and range.	.0493 .0256-.0810	.055	.0306 .0245-.0335	.034	-----	-----					
	White: 2.....	Buffered; autoclaved; average and range	.0145 .0143-.0146	-----	.0071 .0062-.0079	-----	-----	-----					
	7.....	Buffered; autoclaved; chicken pancreas; average and range.	.0434 .0369-.0493	.049	.0379 .0340-.0420	.042	-----	-----					
	White, unenriched; 1 sample, 1 pound.	Takadiastase-papain; 40,000 [200,000].....	.067 [.0134]	.075 [.015]	-----	-----	-----	-----		} 25			
	Whole wheat.....	Takadiastase-papain; method a, tur- bidimetric.	-----	-----	.032	-----	-----	-----					
		Takadiastase-papain; method a, aci- dimetric.	-----	-----	.035	-----	-----	-----					
		Takadiastase-papain; method b, aci- dimetric	-----	-----	.033	-----	-----	-----					
		Takadiastase-papain; method a, tur- bidimetric.	-----	-----	.031	-----	-----	-----					
	White.....	Takadiastase-papain; method a, aci- dimetric.	-----	-----	.035	-----	-----	-----			} 100		
		Takadiastase-papain; method b, aci- dimetric.	-----	-----	.035	-----	-----	-----					
	Whole wheat; 2.....	Buffered; autoclaved; chicken pancreas; average and range.	.0410 .0393-.0428	.046	.0360 .0350-.0370	.040	-----	-----					
	White, enriched, all-purpose; 4.....	do.....	.0095 .0092-.0098	.011	.0067 .0061-.0080	.007	-----	-----					
	do.....	do.....	.0083 .0041-.0103	.009	.0057 .0031-.0075	.006	-----	-----					
	White, enriched, all-purpose; 5.....	do.....	.0102 .0095-.0117	.011	.0081 .0074-.0095	.009	-----	-----				} 114	
	<i>S. faecalis</i> , 4 <i>L. casei</i>	do.....	.0082 .0071-.0096	.009	.0050 .0041-.0058	.005	-----	-----					
	Cake, unenriched; 4.....	do.....	.0416 .0377-.0468	.044	.0270 .0238-.0297	.028	-----	-----					
	Gluten; 6.....	do.....	-----	-----	-----	-----	-----	-----					
	Breakfast cereal	Bran, probably half whole wheat; 5 samples.	Buffered; autoclaved; hog kidney; aver- age and range.	.081 .051-.107	-----	.077 .051-.096	-----	-----					} 41
		Bran; Washington, D. C., market: 2.....	Buffered; autoclaved; average and range	.0466 .0385-.0546	-----	.0242 .0225-.0258	-----	-----					
		3.....	Buffered; autoclaved; chicken pancreas; average and range.	.1208 .1058-.1508	.126	.0796 .0733-.0836	.083	-----						-----	} 114

* Numerals used in column 2 for Reference No. 114 refer to the number of subsamples per lot or to the number of determinations of special samples.

TABLE 10.—Compiled data on the folic acid content of foods—Continued

Item (1)	Description of sample* (2)	Preliminary treatment of sample; method; potency designation of impure standard (in italics) (3)	Folic acid (mg./100 gm.)					Moist basis (7a)	Reference No. (8)	
			Microbiological assays							Other assays
			<i>S. faecalis</i>		<i>L. casei</i>		<i>S. faecalis</i> or <i>L. casei</i> or both			
			Moist basis (4a)	Moisture- free basis (4b)	Moist basis (5a)	Moisture- free basis (5b)					Moist basis (6a)
Wheat and wheat products —Continued Breakfast cereal—Continued	Farina; Washington, D. C., market; 2 <i>S. faecalis</i> , 3 <i>L.</i> <i>casei</i> .	Buffered; autoclaved; average and range	.0071	-----	.0052	-----	-----	} 114		
			.0056-. 0085	-----	.0042-. 0065	-----				
			Buffered; autoclaved; chicken pancreas; average and range.	.0143	.016	.0129	.014		-----	
	.0113-. 0169	-----		.0073-. 0182	-----	-----				
	Flakes; Washington, D. C., market:	Buffered; autoclaved; average and range	.0124	-----	.0097	-----	-----			
			.0120-. 0128	-----	.0096-. 0098	-----	-----			
	2 -----	Buffered; autoclaved; chicken pancreas; average and range.	.0290	.030	.0178	.018	-----			
			.0235-. 0375	-----	.0160-. 0195	-----	-----			
	Shredded Brand I; Washington, D. C., market:	Buffered; autoclaved; average and range	.0107	-----	.0083	-----	-----			
			.0383	.041	.0082-. 0083	-----	-----			
	2 <i>S. faecalis</i> , 3 <i>L. casei</i> -----	Buffered; autoclaved; chicken pancreas; average and range.	.0292	-----	.0292	.032	-----			
			.0272-. 0310	-----	.0272-. 0310	-----	-----			
	Shredded Brand II; Washing- ton, D. C., market:	Buffered; autoclaved; average and range	.0285	-----	.0227	-----	-----			
			.0184-. 0385	-----	.0103-. 0351	-----	-----			
	4 -----	Buffered; autoclaved; chicken pancreas; average and range.	.0868	.091	.0716	.075	-----			
			.0468-. 1369	-----	.0451-. 1099	-----	-----			
	Wheat; 1 sample -----	Buffered; autoclaved; takadiastase -----	.029	-----	-----	-----	-----			
			.046	-----	-----	-----	-----			
	do -----	do -----	.019	-----	-----	-----	-----			
			.039	-----	.040	-----	-----			
Whole wheat; 18 samples -----	Buffered; autoclaved; hog kidney; aver- age and range.	.021-. 050	-----	.021-. 059	-----	-----				
		-----	-----	-----	-----	-----				
Wheat, barley, and other prod- ucts:	Buffered; autoclaved; average and range	.0310	-----	.0240	-----	-----				
		.0244-. 0376	-----	.0140-. 0300	-----	-----				
5 -----	Buffered; autoclaved; chicken pancreas; average and range.	.0522	.054	.0330	.034	-----				
		.0406-. 0646	-----	.0235-. 0422	-----	-----				
Wheat and other products (in- fant food):	Buffered; autoclaved; average and range	.0346	-----	.0368	-----	-----				
		.0245-. 0446	-----	-----	-----	-----				

	4	Buffered; autoclaved; chicken pancreas; average and range.	.0712 .0607-.0821	.074	.0608 .0526-.0690	.063		
Bran	Feedstuff; 5 tests	Chick growth method; average and range.					.21 .11-.35	75
	Feedstuff; 1 <i>S. faecalis</i> , 3 <i>L. casei</i> samples.	Buffered; autoclaved; hog kidney; average and range.	.235		.155 .153-.158			41
Germ	1 sample, 1 pound	Takadiastase-papain; 40,000 [200,000]	1.1 [.22]	1.2 [.24]				25
		Buffered; heated 3 minutes; hog kidney; method a.	.33		.28			91
		Buffered; heated 3 minutes; hog kidney; method b.			.26			41
	Feedstuff; 1 sample	Buffered; autoclaved; hog kidney	.330		.280		.5	6
Middlings	Heated moderately							41
	Feedstuff; 1 <i>S. faecalis</i> , 2 <i>L. casei</i> samples.	Buffered; autoclaved; hog kidney; average and range.	.176		.138 .128-.148			75
	Feedstuff; 3 tests	Chick growth method; average and range.					.09 .02-.14	20
Sprouted, dehydrated	Seed, shoot, and root	Takadiastase-papain; 3,100 [200,000]		10.6 [.164]				130
Whey:								75
Fluid		Autolysis; 40,000 [200,000]		.003 [.0006]				10
Dried	Feedstuff; 3 tests	Chick growth method; average and range.					.09 .04-.18	76
Yam:								65
Raw	Name, white (<i>Dioscorea alata</i> L.).	Buffered; autoclaved; takadiastase; chicken pancreas.		0				75
Yautia Malanga:								65
Raw	Taro, white (<i>Xanthosoma sagittifolium</i> Schott).	do.		0				76
Yeast:								65
		No treatment	.047		.070			75
		Autolysis	.23					76
		pH 4 autoclaved 12 hours	.68		.76			76
Baker's	Fleischmann	0.1 N KOH autoclaved 1 hour	<.04		.10			65
		2 N KOH autoclaved 30 minutes	.46		.59			76
		Takadiastase	.06		.09			65
		Chicken pancreas	.14		.14			76
	Race 7; 18, 5/VI 1946 (dried)	Acid hydrolysis	.44		.55			65
		Hog kidney	1.66		1.31			76
	Race 7; 19, 18/VI 1946 (dried)	Acid hydrolysis	.30		.84			65
		Hog kidney	1.52		1.30			76
	Fleischmann (dried)	Acid hydrolysis	.28		.68			65
		Hog kidney	1.42		.9			76
	Race 7; 9, 21/IV 1946; commercial sample I.	do.		1.54		1.3		65
	Race 7; 19a, 18/VI 1946; commercial sample II.	do.		1.9		1.6		76
	Omsk factory; 9, 21/IV 1946	do.		.88		1.0		65
	Fleischmann; 9, 21/IV 1946; sample I.	do.		2.0		.9		76
	Fleischmann; 19a, 18/VI 1946; sample II.	do.		1.44				65
	Fleischmann, 5 tests	Chick growth method; average and range					4.11 1.50-7.00	75

* Numerals used in column 2 for Reference No. 114 refer to the number of subsamples per lot or to the number of determinations of special samples.

TABLE 10.—Compiled data on the folic acid content of foods—Continued

Item (1)	Description of sample* (2)	Preliminary treatment of sample; method; potency designation of impure standard (in italics) (3)	Folic acid (mg./100 gm.)					Reference No. (8)	
			Microbiological assays				Other assays		
			<i>S. faecalis</i>		<i>L. casei</i>		<i>S. faecalis</i> or <i>L. casei</i> or both		Moist basis (7a)
			Moist basis (4a)	Moisture- free basis (4b)	Moist basis (5a)	Moisture- free basis (5b)	Moist basis (6a)		
Yeast—Con. Baker's—Continued		Takadiastase or other enzyme (ab- stract); chemical method.	1.38				1.55	8	
Brewer's		Takadiastase-papain; <i>40,000</i> [200,000]		.105 [.021]					127
		Takadiastase; <i>40,000</i> [200,000]	.42 [.084]					117	
Anheuser-Busch Strain C:		Control; average and range					.028	18	
3 samples							.018-.034		
2 samples		pH 3 autoclaved 4 hours					.52, .83		
do		2 N KOH autoclaved 1 hour					.36, .60		
1 sample		pH 4.5 autolysis					.54		
do		Takadiastase					.58	76	
Anheuser-Busch		No treatment	.025		.033				
		pH 4 autoclaved 12 hours	.35		.87				
		0.1 N KOH autoclaved 1 hour			.6				
		Chicken pancreas	.62		.66				
		Takadiastase	.23					107	
Nondebittered		Untreated	.22						
		Chicken pancreas	.90						
		Hog kidney	1.32						
		Chicken pancreas; hog kidney	1.90						
		Untreated	.13					65	
Debittered		Chicken pancreas	.90						
		Hog kidney	1.32						
		Chicken pancreas; hog kidney	2.20						
		Acid hydrolysis	.00		.43				
Third generation; 16, 27/V 1946 (dried).		Hog kidney	.55		.72			44	
Third generation; 18, 5/VI 1946 (dried).		Acid hydrolysis	.1		.24				
		Hog kidney	.75		.72				
Third generation; 19, 18/VI 1946 (dried).		Acid hydrolysis	.30		.18				
		Hog kidney	.75		.62				
Fresh first generation; 17-18, 5/VI-15/VI.		do		.90		1.16		44	
Third generation		do		.55		.63			
Ninth generation		do		.73		.27			
		Buffered; autoclaved; chicken pancreas; specified method; average and range.	2.018 1.147-2.44		1.869 1.501-2.450				
1948 A.O.A.C. collaborative as- say.		Buffered; autoclaved; chicken pancreas or hog kidney; other than specified method; average and range.	2.181 1.330-3.02		2.148 1.536-3.024				

Dried	1949 A.O.A.C. collaborative report; 1 laboratory.	Buffered; autoclaved; chicken pancreas				1.63	} 45		
		Buffered; autoclaved; hog kidney				.17			
		Buffered; autoclaved; chicken pancreas; hog kidney				1.68			
	A-B Strain G; 10 tests	Chick growth method; average and range						{ 4.92 1.76-8.00	} 75
	10 samples	Hog kidney; average	3.55						} 61
	Flaked	Takadiastase; rat liver				[2.1]			} 49
	Special sample; 2	Buffered; autoclaved; chicken pancreas; average		2.180		1.965			
		Buffered; autoclaved	.159						} 114
		Buffered; autoclaved; hog kidney	1.55						
		Buffered; autoclaved; chicken pancreas	2.09						
		Experimentally produced:							
		<i>Saccharomyces cerevisiae</i> No. 53; 4 samples	Takadiastase; range			1.91-2.16			} 4
		<i>Torulopsis utilis</i> No. 3; 4 samples	do			1.06-1.52			
		<i>Candida arborea</i> ; 4 samples	do			1.48-1.76			
	<i>Oidium lactis</i> A; 4 samples	do			.56-.78				
	<i>Saccharomyces cerevisiae</i> No. 53; 3 samples	do			3.36-3.56		} 104		
	<i>Torulopsis utilis</i> No. 3; 3 samples	do			.96-1.46				
	<i>Candida arborea</i> ; 3 samples	do			1.15-1.96				
	<i>Oidium lactis</i> A; 3 samples	do			1.20-1.48				
	Sample No. 4	Untreated	.20				} 107		
		Chicken pancreas	1.50						
		Hog kidney	1.53						
		Chicken pancreas; hog kidney	1.60						
	Feedstuff; <i>Manilia murmanica</i> 8, 19/IV 1946; sample I.	Hog kidney		1.70		1.34	} 65		
	Feedstuff; <i>Manilia murmanica</i> 21, 19/VI 1946; sample II.	do		1.80					
	<i>Manilia murmanica</i>	No enzyme	.12		Trace				
		Hog kidney pH 7	.65		.76				
		Hog kidney pH 5	1.41		1.34				
	do	No enzyme	.15		.015-.02				
		Chicken pancreas pH 7	.19		.32				
		Chicken pancreas pH 5	.18		.32				
		Buffered; autoclaved			.13				
		Buffered; autoclaved; hog kidney			.88				
		Buffered; autoclaved	.041				} 91		
		Buffered; autoclaved; hog kidney	.96						
		Buffered; autoclaved; chicken pancreas	.84						
	<i>Torula</i>	Rat-growth method				1.00	} 11		

* Numerals used in column 2 for Reference No. 114 refer to the number of subsamples per lot or to the number of determinations of special samples.

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