BIBLIOGRAPHY OF VITAMIN B (COMPLEX)

BY

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B I B L I O G R A P H Y

Eustis, A. C. & Scott, L. C. 1914

Isolation of Vitamin from Rice Polishings

Biochem Bull, 3, P. 466. (C. L. S. G. O., Index, S. 3, V. 10, P. 1128)

Describes a method for isolating a vitamin from rice polishings. The active end product is capable of relieving polyneuritis in chickens if 4-6 hrs., but the results are not uniform.

Stiles, P. G. 1914

The Vitamins - The Recognition of Essential Constituents of the Diet Hitherto Unclassified-Deficiency Diseases.

Am. Jour. Pharm., 86, P. 237.

Summarizes most of the work done by Funk who was the first person to recognize the importance of the so-called vitamins. The therapeutics of scurvy and beri-beri are discussed.

Fraser, H. & Stanton, A. T. 1915

The Chemistry of Rice Polishings.

Lancet, 1915, 1, P. 1021. (C. L. S. G. O. Index, S. 3, V. 10, P. 1128)

Describe a method to extract the active ingredient from polished rice, but it was unsuccessful, probably due to the very crude methods used.

In 1912 Funk declared the he had isolated the organic base (active ingredient) and he called it "vitamine" but later on he himself with others stated that they had failed to isolate the curative substance.

Seidell, A. 1916

Vitamins and Nutritional Diseases. - A Stable Form of Vitamin, Efficient in the Prevention and Cure of Certain Nutritional Deficiency Diseases.

Public Health Reports 31, P. 364; (Am. Jour. Pharm., 1916 88, P. 410)

Discusses the Importance of vitamins in the study of nutritional diseases such as beri-beri, pellagra, infantile malnutrition, etc.

States that brewer's yeast is the cheapest source of vitamins. Discusses their preparation, purification and concentration.

Brill, H. C. 1917

The Antineuritic Properties of the Infusorial Earth Extract of the Hydrolyzed Extract of Rice Polishings.

Philipp Jour. Sc. 12, A, P. 199; (C. L. S. G. O., Series 3, 10, P. 1128)

Discusses the antineuritic properties of infusorial earth extracts of the hydrolyzed extract of rice polishings. Only part of the vitamin content of the extract was extracted by the proportions of infusorial earth used. There is a loss of antineuritic power as the extract ages.

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The Behavior of Certain Vitamins.

Jour. A. M. A., 70, P. 1005; (Am. Jour. Pharm., 88, P. 510)

The study of water-soluble B vitamin is greatly aiding in bringing nearer an understanding of the vitamins. Its therapeutics and preparation are discussed briefly.

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The Stability of Vitamins.

Jour. A. M. A., 70, P. 1230; (Am. Jour. Pharm., 90, P. 513.

Discusses the stability of the vitamins responsible for the cure of polyneuritis of beri-beri and scurvy at various temperatures and pressures.

Daniels, A. L. & Mc Clurg, I. 1919

Influence of High Temperatures and Dilute Alkalis on the Antineuritic Properties of Foods.

Jour. Biol. Chem., 37, P. 201; (C. L. S. G. O. Index, Series 3, V. 10, P. 1127)

From a nutritional standpoint, a knowledge of the stability of water-soluble B under various conditions to which it is subjected in preservation and preparation is very important.

Experiments were carried out in which the effect of high temperature and dilute alkalis on cabbage, soy beans and navy beans was studied.

Dutcher (R. A.) 1919

Vitamin Studies; Antineuritic Properties of Certain Physiological Stimulants.

Jour. Biol. Chem., 39, P. 63; (C. L. S. G. O. Index, S. 3, V. 10, P. 1128.

Thyroxin, desiccated thyroid, pilocarpine, and tethelin produced definite relief in acute cases of avian polyneuritis but there was no immediate response to these treatments as there was when vitamin B was used. This is probably due to the fact that vitamin prep. contain not only vitamins but also phosphorus, sulphur, & organic compounds which are necessary for the repair and building up of tissue.

Eddy, W. H. & Stevenson, Helen C. 1919

The Suitability of the Bachman Test for Water-Soluble B.

Proc. Soc. Exper. Biol. & Med., 10, 17, P. 52. (C. L. S. G. O. Index, S. 3, V. 10, P. 1128)

Gives a brief outline of the "Bachman Test" for water-soluble vitamin B.

Mitchell, H. H. 1919

On the Identity of the Water-Soluble Growth Promoting Vitamin and the Antineuritic Vitamin.

Jour. Biol. Chem., 40, P. 399; (C. L. S. G. O. Index, S. 3, V. 10, P. 1128)

States that the water-soluble growth promoting vitamin and the antineuritic vitamin are identical. Gives six reasons for his conclusions.

Osborne, T. B. & Mendel, L. B. 1919

Nutritive Factors in Plant Tissues
The Distribution of Water-Soluble Vitamin.

Jour. Biol. Chem., 39, P. 29.

Investigated the amount of water soluble vitamin in some naturally occurring food products such as cotton-seed, Millet seed, flaxseed, kafir corn, hemp seed, cabbage, alfalfa, clover, timothy, spinach, potato, carrots and coconut meal.

Osborne, T. B. & Wakeman, A. J. 1919

Extraction and Concentration of the Water-Soluble Vitamin from Brewer's Yeast.

Jour. Biol. Chem., V. 40, P. 383; (C. L. S. G. O. Index, S. 3, V. 10, P. 1129)

An aqueous extract of yeast was prepared containing as much as the vitamin as possible & as little of the other constituents of yeast as possible. The vitamin concentrate was then obtained by fractional ppt. of the aqueous extract with alcohol. To prevent any protein from going into solution, it was coagulated by boiling & therefore a purer vitamin concentrate could be obtained.

Osborne, T. B., & Wakeman, A. J. & Ferry, E.S. 1919

Preparation of Protein-Free from Water-Soluble Vitamin.

Jour. Biol. Chem., 39, P. 35; (C. L. S.G. O. Index, S. 3, V. 10, P. 1129)

Attempted to determine the relative efficiency of the various methods for removing the water-soluble vitamin from different kinds of protein preparations. A chart is included.

Karr, W. G. 1920

Some Effect of Water-Soluble Vitamin upon Nutrition.

Jour. Biol. Chem., 44, P. 255; (S. L. S. G. O. Index, S. 3, V. 10, P. 1128)

Brewer's yeast, baker's yeast, tomatoes and milk increase the appetite in the dog. The brewer's yeast is more potent than baker's yeast. Drying at 100°C. does not effect the amount of vitamin, but autoclaving the food at 120°C. for 3-4 hrs. leads to some destruction.
Vitamin B. cures mammalian polyneuritis.

Mac Dougal, D. T. 1920

The Effects Yeast Vitamin Water-Soluble B on Plant Cell Masses and on Biocolloids.

Proc. Soc. Exper. Biol. & Med. V. 18, P. 85. (C. L. S. G. O. Index, S. 3, V. 10, P. 1128)

States that solutions which promote growth in plants increase hydration in living and dead cell masses and on biocolloids such as agar and agar protein mistures.

Various plant cell masses and biocolloids were put in vitamin solutions and their amount of hydration was observed.

Miller, Elizabeth W. 1920

The Effect of Cooking on the Water-Soluble Vitamin in Carrots and Navy Beans.

Jour. Biol. Chem., V.44, P. 159; (C. L. S. G. O. Index, S. 3, V. 10, P. 1128)

1. There was no reduction in vitamin content in carrots when they were cooked at 100°C. for 30 Min. There was no destruction of vitamin when carrots were packed in a jar and heated at 115°C. for 45 Min.

2. There was a decrease of 40.6% in vitamin content when navy beans were cooked at 120°C. for 30 Min. The beans were overcooked.

3. There was a decrease of 37.5% of vitamin content when navy beans were cooked in a 0.5% solution of $NaHCO_3$ for 1 hr., 10 min.

4. 36-70 % of the vitamin was present in the cooking water.

Osborne, T. B. 1920

Water-Soluble Vitamin B.

Med Rec. N. Y., 97, P. 630; (C. L. S. G. O. Index, S. 3, V. 10, P. 1129)

Summarizes the symposioum on vitamins held by the Medical Society of the State of New York at its 114th annual meeting. T. B. Osborne, Casimir Funk, L. E. Holt, Mendel, etc. participated in the discussions.

Osborne, T. B. & Mendel, L. B. 1920

Nutritive Factors in Plant Tissues
III. Further Observation on the Distribution of Water-Soluble Vitamin

Jour. Biol. Chem., 41, P. 451; (C. L. S. G. O. Index, S. 3, V. 10, P. 1129)

Investigated the amount of water-soluble vitamin in various vegetables.

1. Alfalfa & clover contain the most.
2. Tomato is rich in water-soluble vitamin.
3. Spinach, cabbage, turnip and carrot all contained about the same amount, one-half as much as alfalfa, clover etc.

Berman, L. - 1921

Rapid Method for the Determination of Water Soluble Vitamin B.

Jour. Am. Med. Assoc., 76, P. 307; (Yearbook of Brit. Pharm. Conf., 58, P. 130)

Devised a rapid method for the determination of Vitamin B. The amount of vitamin B in the unknown vitamin tube is compared with the amount in a control tube. Method of calculation.

Dunham, G. C. 1921

The Water Soluble B Vitamin Content of Certain Vegetables.

Mil. Surgeon, 48, P. 223; (C. L. S. G. O. Index, S.3, V. 10, P. 1128)

The water-soluble vitamin B content of yeast, potato, spinach, cabbage, carrots, peas and turnips were studied and put down in chart form.

Water soluble vitamin B is fairly stable at 100°C. and considerable destruction takes place at 120°C.

Canned peas retain a considerable amount of vitamin.

Eddy, W. H. Heft, Hattie L., et al. 1921

Studies in the Vitamin Content; the Yeast Test as a Measure of Vitamin B.

Jour. Biol. Chem., 47, P. 247; (C. L. S. G. O. Index, S. 3, V. 10, P. 1128)

Discuss generally the yeast test as a measure of Vitamin B. giving the five methods of carrying out the test which are 1. by counting the cells; 2. by weighing the cells produced; 3. by determining the CO_2 produced; 4. by determining the volume of the cells produced and 5. the Funk & Dubin method which combines the quantitative accuracy with the simplest technique. Also gives the objections to and a resume of the yeast test.

Funk, C. 1921

The Anti Beri-Beri Vitamin

Jour. Indust. & Engin. Chem., 13, P. 1110; (C. L. S. G. O. Index, S. 3, V. 10, P. 1128)

When studying the chemistry of Vitamin B, experimental difficulties were encountered due to the fact that no precipitation or color reactions for vitamin B were known.

Drummond, a former assistant of Funk, suggested that the "e" of vitamine be dropped. Funk, who originated the word "vitamine", had no objection to this, but he said that the reason he used the word "amine" was for euphonic reasons. He wanted to use a name that would act as an urge to the research men and that the "e" was added to designate the presence of a nitrogenous compound.

Harden, A. & Zilva, S. S. 1921

The Synthesis of Vitamin B by Yeasts.

Bio. Chem. Jour., 15, P. 438; (C. L. S. G. O. Index, S. 3, V. 10, P. 1128)

Object of experiments:

1. To ascertain "whether yeast grown on a medium devoid of vitamin B is able to produce this substance and
2. whether different species of yeast all produce this vitamin.

The yeasts used were: Brewer's yeast, S. cerivisiae from synthetic medium, & S. ellipsoideus from wort & from synthetic medium. The curative effect of each was compared by testing their ability to cure polyneuritis in the pigeons. All produced cure.

S. ellipsoideus produces vitamin B and the yeasts grown on the synthetic medium contain B, but not as much as those grown on wort.

La Mer, V. K. 1921

The Present Status of Nutrition.

The Water Soluble Vitamin B--What it is, Where it is Found, and How it Acts.

Am. Food Jour., 16, No. 10, P. 31; (C. L. S. G. O. Index, S. 3, V. 10, P. 1128)

Discusses the brief history of vitamin B, the detection of polyneuritis, the occurrence of Vitamin B, its solubility, and the effects of cooking on Vitamin B.

Osborne, T. B. & Leavenworth, C. S. 1921

The Effect of Alkali on the Efficiency of the Water-Soluble Vitamin B.

Jour. Biol. Chem., 45, P. 423; (C. L. S. G. O. Index, S.3, V. 10, P. 1129)

Confirm the reports of other men (Mc Callum & Simmonds, Drummond & Voegtlin and Lake) who stated that there is a destruction of Water-Soluble Vitamin B when heated with alkalis. They also state that vitamin B can be concentrated or isolated using dilute alkaline solutions without destroying the activity provided that a low temperature and short time of exposure to the alkali is used.

Seidell, A. 1921

Expermints on the Isolation of the Antineuritic Vitamin.

Jour. Ind. & Eng. Chem., 13, P. 1111; (Yrbk. A. Ph. A., V. 10, P. 521)

Describes an experiment in which 2 precipitates are prepared, one consisting chiefly of adenine silver and lacks antineuritic properties and the other is similar to histidine and also possesses no antineuritic properties.

Vitamins and their Distribution

Jour. A. M. A., 77, P. 570; (Am. Jour. Pharm., P. 721)

The distribution of the fat-soluble A or anti rachitic factor, water-soluble B or antineuritic factor, and the antiscorbutic factor are discusses; also gives a table showing the distribution of these factors in many classes of foodstuffs.

Bell, M. & Mendel, L. B. 1922

The Distribution of Vitamin B in the Wheat Kernel.

Am. Jour. Phys., 62, P. 145; (S. L. S. G. O. Index, S. 3, V. 10, P. 1128)

In comparison with some other food materials, the wheat kernel isn't such a good source of vitamin B. The vitamin is found in both the endosperm and embryo with the endosperm being the greatest source. The concentration of the vitamin in the embryo is several times that in the endosperm, but the embryo makes up such a small percent of the entire kernel that its presence or absence makes little difference on the total amount.

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Berman, S. 1922

A Rapid Method of the Determination of Water-Soluble Vitamin B.

Jour. Am. Med Assoc., 76, P. 307; (C. L. S. G. O. Index, S. 3, V. 10, P. 1128)

Discusses a method for the determination of the water-soluble vitamin B in yeast in which a comparison of the amount of growth of yeast in a standard solution was made with that of a solution containing the vitamin after centrifuging and incubation.

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Hofmeister, F. 1922

Studien Über Qualitative Unterernährung
II. Mitteilung
Der Experimentelle Nachweis des Antineuritins.

Biochem. Zeit, 129 p. 477; (C. L. S. G. O. Index, S. 3, V. 10, P. 1128)

Makes a qualitative study of undernourishment and the effect of antineuritic vitamins on it.

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Kennedy, & Palmer, L. S. 1922

Yeast as a Source of Vitamin B for the Growth of Rats.

Jour. Biol. Chem., 54, P. 217; (C. L. S. G. O. Index S. 3, V. 10, P. 1128) Analyst, 48, P. 36; Yrbk. A. Ph. A., 12, P. 301)

Various feeding experiments on rats do not support the general belief that yeast is a valuable source of vitamin B. or that it can be accepted as a standard product in which vitamin B is required.

Their strongest argument against the use of yeast as a source of vitamin B is that their rats failed to reproduce normally and rear their young.

Lecoq, M. R. 1922

Influence De Certaines Ratiques Industrielles Sur La Valeur Nutritive Des Farines Composées Alimentaires.

Annal. des Falsif., 15, P. 288; (Am. Jour. Pharm., 95, P. 315)

The heating of certain flours or of milk in the presence of alkaline products ($NaHCO_3$) leads to the destruction of vitamin B.

Levine, V. E., Mc Collum, E. V., and Simmonds, Nina 1922

Glacial Acetic Acid as a Solvent for the Anti-neuritic Substance, Water-Soluble B.

Jour. Biol. Chem., 53, P. 7 (C. L. S. G. O. Index, S. 3, V. 10, P. 1128)

State that glacial acetic acid is the best known organic solvent which they have yet found for the extraction of water-soluble B from plant materials.

Also found that the active glacial acetic acid extract can be concentrated to a greater extent by removing by precipitation with ether much of the inactive material.

Mac Donald, M. B. 1922

The Synthesis of Water-Soluble B by Yeast Growth in Solutions of Purified Nutrients.

Jour. Biol. Chem. V. 54, P. 243; (C. L. S. G. O. Index S. 3, V. 10, P. 1128)

States that as far as its content of water-soluble B is concerned, yeast grown in solutions of purified nutrients is similar to yeast grown in other mediums.

Gives the formulas of the nutrient solutions used in the experiments.

Orton, C. R. , Mc Collum, E. V. & Simmonds, N. 1922

Observations on the Presence of the Antineuritic Substance, Water-Soluble B, in Chlorophyll-Free Plants.

Jour. Biol. Chem., V. 53, P. 1 (C. L. S. G. O. Index, S.3, V. 10, P. 1128)

States that water-soluble B is not concerned with the structure of the chloroplast.

Gives examples of the onion root and mushroom, both of which were free of chloroplasts chlorophyll, and yet they contained a certain amount of water-soluble B.

Osborne, T. B. & Mendel,L. B. 1922

Further Observations on the Distribution of Vitamin B in some Vegetable Foods.

Jour. Am. Med. Assoc., 78, P. 1121; (C. L. S. G. O. Index, S. 3, V. 10, P. 1129; Yrbk, A. Ph. A., 11, P. 336)

Investigated the amount of vitamin B in the following various vegetables:

Asparagus -- unexpectedly rich in vitamin B
Celery -- fair
Lettuce -- more than celery
Dandelions -- results not so good
Asparagus, celery & lettuce contain a greater amount of vitamin B than apples & pears or the juice of grapes.

Osborne, T. B. & Mendel,L. B. 1922

Nutritive Factors in Plant Tissues V. Further Observations on the Occurrence of Vitamin B.

Proc. Soc. Exper. Biol. & Med., 19, P. 291; (C. L. S. G.O. Index, S.3, V. 10, P. 1129)

Found that asparagus, celery, dandelion, lettuce, and parsley contain noteworthy amounts of vitamin B.

Osborne, T. B. and Mendel, L. B. 1922

Quantitative Aspects of the Roll of Vitamin B in Nutrition.

Jour. Biol. Chem., 54, P. 739; (C. L. S. G. O. Index, S. 3, V. 10, P. 1129)

Performed a series of experiments using rats to find out the effects of feeding varied amounts of vitamin B. Found that a decrease in the amount of vitamin B resulted in the loss of appetite and decrease in body weight. An increase in vitamin B caused the increase in the appetite and gain in body weight.

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Seidell, A. 1922

Further Experiments on the Isolation of the Antineuritic Vitamin

Jour. Am. Chem. Soc. 44, P. 2042; (C. L. S. G. O. Index, S. 3, V. 10, P. 1129)

Highly active vitamin fractions were isolated from yeast by using the adsorptive powers of fuller's earth. This compound was treated further & was finally precipitated first with silver nitrate & then with ammoniacal silver nitrate. One third of the solids of the extract were precipitated as Ag compounds and these contained a little more than one half of the antineuritic vitamin.

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Seidell, A. 1922

Improved Method for the Preparation of Vitamin-Activated Fuller's Earth.

Public Health Reports, 36, P. 801; (Am. Jour. Pharm., 94, 440)

A new method for the preparation of the antineuritic vitamin from brewer's yeast using fuller's earth (the variety from Surrey, England) as the absorbing agent is discussed.

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Tsukiye, S. 1922

Beiträge Zur Kenntnis des Vitamins (B) Nebst Darstellungs-methode.

Biochem Zeit, 131, P. 124; (Jour. Chem. Soc. Lond., 122, Pt. 1, P. 974; Yrbk. A. Ph. A., 11, P. 337; Yrbk. Brit. Pharm. Conf., 60, P. 527)

Prepared an active vitamin B preparation from an 80% alcoholic extract and also an aqueous extract of rice polishings. A few of the properties of the products were discussed.

Coward, K. H. Burn, H. H., Ling, H. W. & Morgan, B. G. E. 1923

Determination of Vitamin B.

Biochem. Jour., 17, P. 1719; (Yrbk. Brit. Pharm. Conf., 71, P. 285)

Discuss the advantages and disadvantages of the pigeon method, the percentage of birds cured from antineuritis for 24 hrs. by one dose and the rat growth method for the determination of vitamin B. The pigeon method was the most accurate in spite of the fact that the probable error was much greater.

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Desgrez, A., Bierry, H., and Rathery, F. 1923

Utilité de la Vitamine B et du Levulose dans la Cure par L'Insuline.

Compt. rend., 177, P. 795; (Yrbk. Brit. Pharm Conf. 61, P. 35)

State that the addition of vitamin B or levulose or a mixture of these two to the diet when insulin is being used allows a greater interval of time between the injections of insulin, and increases the efficiency of a single dose.

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Findlay, G. M. 1923

A Preliminary Note on the Destruction of Vitamin B by Age.

Biochem. Jour. 17, P. 887; (Yrbk. A. Ph. A., 13, P322; C. L. S. G. O. Index, S. 3, V. 10, P. 1128)

Indian lentils and peas kept for 38 years show appreciable amounts of vitamin B. This is in contradiction with the work done by Ghose. Further and full investigation must be done on this question.

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Funk, Harrow, B. & Paton, Julia B. 1923

Extraction of Vitamins from Yeast and Rice Polishings with Various Water-Miscible Solvents.

Jour. Biol. Chem., 57, P. 153. (Yrbk. A. Ph. A., 12, P. 30)

70% alcohol and 70% acetone are the best solvents for extracting vitamins from yeast. The vitamin B and D content of yeast are about the same.. Extracts from rice polishings are highly active when tested on rats but not so active when tested on pigeons.

Heller, V. G. 1923

Studies on Yeast; the Vitamin B Content of Yeast.

Jour. Biol. Chem., 55, P. 385; (C. L. S. G. O. Index,S.3 V.10 P. 1128)

The vitamin potency of yeast was determined--2.5% of yeast is sufficient for growth at a normal rate. Reproduction is possible but not normal. 5% of this yeast causes growth at a rate which is better than the normal rate.

Drying of yeast destroys a part of the vitamin. Yeast grown in a synthetic medium is not as rich in vitamin B as the yeast grown in wort. Yeast synthesizes both the growth promoting vitamin and the antineuritic vitamin.

Jendrassik, A. 1923

A Color Test for Water-Soluble B.

Jour. Biol. Chem. 57, P. 129; (C. L. S. G. O. Index, S. 3 V. 10, P. 1128; Yrbk. A. Ph. A., 12, P. 345; Yrbk. Brit. Pharm. Conf., 61, P. 533)

Summarized all of his work done on color tests for water-soluble vitamin B.

Levene, P. A. & Muhlfeld, Marie. 1923

On the Identity or Non-identity of Antineuritic and Water-Soluble B Vitamins.

Jour. Biol. Chem., 57, P. 341; (C. L. S. G. O. Index, S. 3, V. 10, P. 1128)

Add additional evidence to the support of the view that the antineuritic and growth-promoting principles of vitamin B are not identical.

Also state that before a final solution of the problem can be obtained, the chemical nature of the two active principles must be known.

Mendel, L. B. & Cannon, Helen C. 1923

Eggs as a Source of Vitamin B.

Jour. Am. Med. Assoc., 80, P. 302; (Yrbk. Brit. Pharm. Conf. 60, P. 526)

State that a product can be extracted from egg

yolk that is quite rich in vitamin B. The daily dose required for a 100 Gm. rat is considerably less than that of the most potent dried yeast so far examined.

The whole egg is not exceptionally rich in vitamin B when compared to other foods.

Sherman, H. C. & Edgeworth, Harriet 1923

Experiments with two Methods for the Study of Vitamin B.

Jour. Am. Chem. Soc., 45, P. 2712.

Discuss the two methods for studying vitamin B which are (1) gravimetric yeast growth method (2) rat growth method.

The first method gave very consistent results but is objected to because the increased growth of yeast which it measures may be due to other substances favorable to yeast growth & as a result would not measure the relative amounts of yeast.

The rat growth method is the best even though the probable error is larger because results can be interpreted in terms of vitamin B with much greater certainty & therefore is the preferred method.

Sherman, H. C. & Grose, M. R. 1923

A Quantitative Study of the Destruction of Vitamin B by Heat.

Jour. Am. Chem. Soc., 45, P. 2728; (C. L. S. G. O. Index, S. 3, V. 10, P. 1128; Yrbk. Brit. Pharm. Conf., 61, P. 533)

Describes the destruction of vitamin B. by heat. In the experiments tomato juice was heated for 4 Hrs. at different temperatures and the amount of destruction of vitamin B is tabulated.

Sherman, H. C. & Spohn, A. 1923

A Critical Investigation and Application of the Rat-Growth Method for the Study of Vitamin B.

Jour. Am. Chem. Soc., 45, P. 2719; (C. L. S. G. O. Index S. 3, V. 10, P. 1128)

Investigated the rat growth method for the study of vitamin B & discussed the factors affecting the accuracy of the results. In their experimental work, they found that vitamin B present in milk powder was comparatively stable at 100°C. in the dry state, but less stable at 100°C. when in solution.

Steenbock. H. Sell, M. T. & Jones, J. H. 1923

Storage of Vitamin B by the Rat.

Jour. Biol. Chem. 55, P. 411; (C. L. S. G. O. Index, S. 3, V. 10, P. 1129)

Prove by experimentation with rats that rats possess very little ability to store vitamin B.

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Steenbock, H. Sell, M. T. & Nelson, E. M. 1923

Vitamin B. -- I. A Modified Technique in the Use of the Rat for the Determinations of Vitamin B.

Jour. Biol. Chem. 55, P. 399; (Yrbk. A. Ph. A., 12, P. 190)

Found that when rats are fed on a vitamin B-free diet, they eat their own excreta. If the excreta is removed, the amount of vitamin B. necessary to restore them to normal is twice as great as before.

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Vitamins

Drugg. Circ. 67-67, April, P. 136

Ice cream contains vitamins A and B normally present in the milk. An insignificant amount of vitamin is present.

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Bowman, H. H. M. & Yee, M. A. 1924

Crystals of Vitamin B. From the Mung Bean.

Proc. Soc. Exper. Biol. & Med. 1924, P. 228; (C. L. S. G.O. Index, S. 3, V. 10, P. 1128)

Directions are given showing how crystals of vitamin B can be extracted from the Mung bean. The potency of the crystals were tested on pigeons and the results were recorded.

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Collazo, J. A. & Funk, C. 1924

The Requirements of Vitamin B in the Metabolism of Foods Containing Proteins and Carbohydrates in Varying Proportions.

Jour. Metabol. Research, 5, P. 187; (C. L. S. G. O. Index, S. 3, V. 10, P. 1128)

There is a definite relationship as to the amount of protein or starch a given amount of vitamin B can take care of. The food intake was higher with more protein than with more starch and the increase in weight after doses of extra vitamin was higher in the case of higher protein diets than with higher starch diets.

Collazo, J. A. & Funk, C. 1924

The Metabolism of Vitamin B as one of the Food Constituents; Its Excretion in the Pigeon.

Jour. Metabol. Research, 5, p. 195; (C. L. S. G. O. Index,S. 3, V. 10, P. 1128)

It has been definitely proved that vitamin B in large doses is present in the excreta. The amount of vitamin B had to be increased 3-4 times its maintainence dose before it occured in the excreta. This exploded a theory that vitamin B was a catalyst in metabolism and proved that it is used up in performing its function. In the absence of vitamin B a green color appears in the excreta of the pigeon, a safe sign of deficiency of this substance in the diet.

Kramár, E. 1924

Vitaminstudium; Über das Verhalten des--B.Vitamins gegenüber Redulstionsprozessen.

Biochen. Zeit, 154, P. 343; (C. L. S. G. O. Index, S. 3, V. 10, P. 1128)

Discusses the retention of the vitamin B potency in various reduction processes. The effect of vitamin B is not destroyed or diminished by reduction in weak alkaline solution.

Levene, P. A. & Van der Hoeven, B. J. C. 1924

The Concentration of Vitamin B.

Jour. Biol. Chem., 61, P. 429; (C. L. S. G. O. Index, S. 3, V. 10, P. 1128; Yrbk. A. Ph. A., 13, P. 321)

Discusses the concentration of vitamin B as to the advantages & disadvantages of Lloyd's reagent, varium hydroxide, kaolin and silica gel as absorbents.

Levine, V. E. 1924

A Critical Study of the Jendrassik Reaction for Water-Soluble B.

Jour. Biol. Chem., 62, P. 157; (C. L. S. G. O. Index, S. 3, V. 10, P. 1128; Yrbk. A. Ph. A., 13, P. 321; Chem. Zent., 1925,1, P. 2499; Jahresber d Pharm., 84-85, p. 254)

"The ferric ferricyanide reaction proposed by Jendrassik is not a specific test for water-soluble B."
States that there is a probability that water-soluble B might by a phenol.

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Nitzescu, I. I. 1924

L'action de la Chaleur Humide(autoclave) et de la Chaleur seche (étuve) sur le Facteur B.

Jour. de Pharm. et de Chim., 29, P. 299; (Yrbk. Brit. Pharm. Conf., 61, P. 534)

Says that when fats are heated in a steam autoclave at 110°C. for 1 hour, vitamin B is completely destroyed. When the same material is heated for 90 min. in dry air at 120°C. vitamin B is practically unaffected.

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Peters, R. A. 1924

The Action of Nitrous Acid upon the Antineuritic Substance in Yeast.

Bio-Chem. Jour., 18, P. 858; (C. L. S. G. O. Index, S. 3 V. 10, P. 1129)

States that there is no destruction of the curative properties in acid extracts of yeast.
The curative value of histamine in curing neuritis in pigeons is questionable.
The curative test on polyneuritic pigeons can be used as a guide in concentration of vitamin B.

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Seidell, A. 1924

The Preparation of Crystalline Picrate having the Antineuritic Properties of Vitamin B.

Pub. Health Rep., 39, P. 294; (C. L. S. G. O. Index, S. 3, V. 10, P. 1129)

An active vitamin extract can be prepared from brewer's yeast by utilizing the selective adsorption by fuller's earth of the active constituent of the yeast solution. This fraction can be precipitated as an insoluble picrate (by precipitation with picric acid) which consists of two compounds, one of which is very high in antineuritic activity.

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Seidell, A. 1924

Vitamin B in Crystalline Form.

Science Supplement, Mch. 21, P. XII; (Am. Jour. Pharm., 96, P. 302)

For the first time has prepared crystalline vitamin B from brewer's yeast by adsorbing with fuller's earth and precipitating with picric acid.

Claims that the chemical identity of the vitamin will be known soon.

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Southgate, H. W. 1924

The Effect of Fermentation on the Water-Soluble Vitamin Content of Wort.

Biochem. Jour., 18, P. 1248; (C. L. S. G. O., Index, S. 3, V.10, P. 1129)

States that when yeast is grown in beer wort, it abstracts the water-soluble vitamin from the medium. The organism doesn't synthesize any of the vitamin but might use some of it which it takes from the wort.

This answers the question of why there is less vitamin in beer than in the malt which was used to make the beer.

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Spinka, J. 1924

Untersuchungen über den Einflusz Ultravioletter Strahlen auf Akzesso Rische Stoffe-- II. Mitteilung Versuche über die Beeinflussung des Faktors B.

Beiochem. Zeit., 153, P. 219; (Jahresber. d. Pharm., 84-85, P. 251)

Prepared yeast will cure polyneuritic convulsions but will not promote growth. A more powerful preparation can be made by treatment with ultraviolet light.

Vercellana, G. 1924

(Content of Vitamins B and C in Fresh and in Preserved Tomatoes)

Giorn. clin. med., 20, P. 2693; (Yrbk. Brit. Pharm. Conf. 63, P. 328; Chem. Abstr., 20. P. 2693; Ber. d. Ges. Phys., 31, P. 239; Chem. Zaentrlbl., 1925, V. 2 P. 1692; Jahresber. d. Pharm., 84-85, P. 255

(Discusses the amount of vitamins B and C in fresh and preserved tomatoes.
The flesh and juice of fresh tomatoes are rich in vitamin B. The skin and seeds contain practically no vitamin B. Preserved tomatoes contain practically no Vitamin B.)
The Original was not available.

Burton, Georgia W. 1925

Effect of the Hydrogen Ion Concentration upon the Destruction of Vitamin B by Heat.

(Columbia Univ.)8° New York; (C. L. S. G. O. Index, S. 3, V. 10, P. 1127)

Discusses the effect that the hydrogen ion concentration has upon the destruction of water-soluble vitamin B. Tomato juice was heated at various temperatures and at variable lengths of time, and solutions of variable hydrogen ion concentration and the effect was tested on vitamin B - free albino rats.
The destruction of vitamin B due to heating at 100°C. for 1 hr. & 4 hrs. at various pH's. is tabulated.

Cowgill, G. R., Deuel, H. J., & Smith, A. H. 1925

Studies in the Physiology of Vitamins: Quantitative Aspects of the Relation Between Vitamin B and Appetite in the Dog.

Am. Jour Physiol., 73, P. 106; (C. L. S. G. O. Index, S. 3, V. 10, P. 1128)

A relationship exists between the amount of vitamin-containing material, the body-weight of the animal and the number of days over which the appetite is completely restored.
There is a chart showing nine sources of vitamin B and their vitamin B content and their appetite-promoting power.

Croll, H. M. & Mendel, L. B. 1925

The Distribution of Vitamin B in the Maize Kernel.

Am. Jour. Physiol. 74, P. 674; (Chem. Zentrlbl, 1926, 2, P. 908; Jahresber. d. Pharm., 84-85, P. 50)

Discusses the distribution of vitamin B in the maize kernel. Practically all of the vitamin B of the whole grain is found in the embryo. The endosperm contains practically no vitamin B, while the bran contains an extremely small amount, if any.

Hellier, V. G., Mc Elroy, C. H. & Garlock, Bertha 1925

The Effect of the Bacterial Flora on the Biological Test for Vitamin B.

Jour. Biol. Chem., 65, P. 255; (C. L.S. G. O. Index, S. 3, V. 10, P. 1128)

State that the bacterial flora of animals do have an effect on the biological test for vitamin B. The growth of the animal is accelerated by them.

Levene, P. A. & Van der Hoeven, B. J. C. 1925

The Concentration of Vitamin B

Jour. Biol. Chem., 65, P. 483; (C. L. S. G. O. Index, S.3 V. 10, P. 1128)

A more highly concentrated vitamin B can be obtained by concentrating further the concentrate from brewer's yeast extract. This was done by first precipitating with lead acetate and then precipitating with barium hydroxide; contains 5.2% nitrogen and is potent in a daily dose of 2-4 Mg. This product can be concentrated further by silica adsorption.

Levine, U. E. 1925

The Jendrassik Reaction for Vitamin B, with reference to the Work of Bezssonoff and of Levine.

Jour. Biol. Chem., 64, P. 591; (C. L. S. G. O. Index, S. 3, V. 10, P. 1128)

The essential part of the first claim of Levine (November, 1924) "the ferric ferricyanide reaction proposed by Jendrassik is not a specific test for water-

soluble B. It is given by phenol----" was contained in Bezssonoff's study (January, 1924)

The difference between the observations of Levine and Bezssonoff was the Bezssonoff indicated the special and great sensitiveness of the ferric ferricyanide reaction for the ortho- and para-polyphenols.

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Scheunert, A., & Hermersdörfer, Ch. 1925

Zur Kenntnis der Vitamin--IV Mitteilung. Über den Gehalt des Pferdefleisches an Vitamin A und B.

Biochem. Zeit., 156, P. 58: (Jahresber. d. Pharm., 84-85, P. 409)

Horse meat is rich in vitamin A but does not contain enough vitamin B to maintain growth.

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Smith, A. H., Cowgill, G. R. & Croll, H. M. 1925

A Note on the Technique for Studying Vitamin B.

Jour. Biol. Chem., 66, P. 15; (C. L. S. G. O. Index, S. 3, V. 10, P. 1129; Yrbk. A. Ph. A., 14, P. 304)

State that rats used must be kept in individual cages; and also the cages must have wire mesh false bottoms so that they will be unable to get at their own excreta.

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Willimott, S. G. 1926

Vitamin B in Fresh Lemon Rind

Biochem Jour., 20, (1), P. 31; (Biolog. Abstr., 1, P. 59; Yrbk. Brit. Pharm. Conf., 64, P. 368)

Finds that vitamin B is present in appreciable amounts in the outer rind of the fresh lemon.

The experiments were performed on albino rats. It was found that there is enough vitamin B present in the fresh rind for reproduction but not enough for successful rearing.

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Chick, Harriette & Roscoe, M. H. 1927

Composite Nature of Water-Soluble Vitamin B.

Biochem. Jour. 21, P. 698; (Chem. Abstr., 21, P. 3073; Yrbk. Brit. Pharm. Conf., 64, P. 369)

Confirm Goldberger's view that vitamin B consists of two factors: (1) the antineuritic vitamin which prevents polyneuritis and (2) vitamin B (Goldberger's P-P factor) which cures marasmus. Both of these factors are necessary for maintenance and growth. Vitamin B (P-P factor) is more stable toward heat than the antineuritic vitamin. Various preparations can be prepared which contain either one or both. Yeast contains both.

Lecoq, M. R. & Randoin, Mme. L. 1927

Recherches Experimentales sur les Vitamines B Contenues dans les Levures, dans Leurs Extraits et dans Leur Milieu de Culture.

L'Union Pharm., 68-69, P. 338; (Drug. Circ., 71, July, 1927, P. 686; Yrbk. A. Ph. A., 16-17, P. 506)

Water soluble vitamin B of yeast is altered when desiccated at 50°C.; when dried at low temperatures and under pressure, its properties are preserved but other constituents such as diastase are destroyed; fresh alcoholic extract of beer yeast is superior to the dried at 50°C.; rats are inferior to pigeons in experimental work.

Peskett, G. L. 1927

The Synthesis of Antineuritic Vitamin by Yeast.

Biochem. Jour. 21, P. 1102; (Yrbk. Brit. Pharm. Confed., 65, P. 148)

Confirms the observations of Hawkings (Biochem. Jour., 21, P. 728) that yeast can synthesize the antineuritic factor from a (vitamin B) medium or from contaminating bacteria.

Plinner, R. H. A. & Co-workers 1927

Experiments on Nutrition -- VIII. Comparative Vitamin B Value of Foodstuffs.-Cereals. I.

Biochem. Jour., 21, P. 1141; (Chem. & Drug., 107, P. 811; A. Ph. A., 16-17, P. 507; Yrbk. Brit. Pharm. Conf., 65, P. 132)

Examined 14 common cereals for their comparatuve vitamin B content and tabulates the results.

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Quinn, E. J. Burtis, M. P. & Milner, E. W. 1927

Quantitative Studies of Vitamins A, B, & C in Green Plant. tissues other than leaves.

Jour. Biol. Chem., 72, P. 557; (Chem. Zentrlbl., 1927, 2, P. 1852; Jahresber. d. Pharm., 86-87, P. 175)

String beans and green peppers are as good sources of vitamin B as lettuce or cabbage but not as good as spinach.

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Reader, V. & Drummond, J. C. 1927

Relation Between Vitamin B and Protein in the Diet of Growing Rats.
Physiological Roll of Vitamin B. Part II.

Biochem. Jour. 20, P. 1256; (Chem. and Drug., 106, P 371; Yrbk A. Ph. A., 16-17, P. 508)

Confirm the views of Gladys Hartwell that a definite relationship exists between vitamin B intake and the amount of protein in a diet. Their experiments do not support the opinion that vitamin B stands in a similar relationship to carbohydrate or total calorie intake.

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Salmon, W. D. 1927

On the Existence of two Active Factors in the Vitamin B Complex.

Jour. Biol. Chem., 73, P. 483; (Yrbk. A. Ph. A., 16-17, P. 1037)

Worked on the two factors in vitamin B using the seeds of the velvet bean and soy bean and the leaves of the velvet bean and ape for the source of the two factors. A nomendature for the two factors is suggested.

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(Solution of Vitamin B.)

Pharm. Tidskr., 1927, P. 286; (Pharm. Jour.,.119, P. 526; Yrbk. A. Ph. A., 16-17, P. 508)

(A solution of vitamin B is made from an extract of rice bran. The Sodium Chloride solution is put up in ampuls and adjusted to a pH 7.0.)

The original was not available.

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1927

The Composite Nature of Vitamin B.

Jour. Am. Med. Assoc., 89, P. 2044; (Pharm. Jour., 120, P. 129; Yrbk. A. Ph. A., 16-16, P. 506)

Vitamin B is of a composite nature. So far two factors have been found: Anti-neuritic and anti-pellagric. Much work remains to be done on the vitamins in order to determine their composition and nature.

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Bacharach, A. L. & Allchorne, E. 1928.

Vitamin B Content of Malt Extract.

Biochem. Jour. 22, P. 313; (Yrbk. Brit. Pharm. Conf., 65, P. 280)

Found that all the samples of commercial malt extract were rich in vitamin B the water-soluble growth-promoting factor, and the samples which were richer were previously known to have a higher diastatic power than the others.

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Bierry, H. & Kollman, M. 1928

Sur le Mode D'action de la Vitamine B.

Compt. rend., 186, P. 1062; (Yrbk. Brit. Pharm. Conf., 65, P. 286)

The action of Vitamin B on the animal body is discussed. In the human body deprivation of vitamin B causes loss of appetite, anorexia, debility and gastro-intestinal disturbances.

Also discuss the possibility of vitamin B containing a hormone of vegetable origin which effects nutrition through endocrine secretions.

State that the action of vitamin B is exerted on both the glands of internal and external secretions.

Chase, Eleanor F. 1928

A Quantitative Study of the Determinations of the Antineuritic Vitamin (For B_1).

(Columbia Univ.)8°New York (C. L. S. G. O. Index, S.3 V. 10 P. 1127)

Discusses quantitatively the destruction of the antineuritic vitamin by simple heating and then by treating with alkali. After baker's yeast had been heated for 2, 4, & 6 hours there was no increase in destruction when yeast was heated with 0.1 N KOH for 2, 4, & 6 hours showing that practically all of the vitamin F had been destroyed by simple heating.

Dutcher, R. A. 1928

Vitamin B Terminology

Science, 68, P. 206; (Squibb Abstr. Bull., 1, No. 38, P. 18; Yrbk. A. Ph. A., 16-17, P. 1039)

A committee of the American Society of Biological Chemistry on vitamin B terminology suggested three systems:

(1) British Plan: B------vitamin B complex
B_1------heat-labile factor
B_2------heat-stable factor

(2) Sherman Plan: F------heat-labile factor
G------heat-stable factor

(3) Mc Collum Plan: B------heat-labile factor
New letters for the other factors.

Evans, H. M. & Burr, G. O. 1928

A New Differentiation Between the Antineuritic Vitamin B and the purely Growth Promoting Vitamin B.

Jour. Biol. Chem., 77, P. 231; (Yrbk. Brit. Pharm Conf., 65, P. 283)

Using rats as experimental animals, tested the effect on growth of various diets containing yeast, lard and tikitiki, which is a dilute alcoholic extract of white rice polishings.

Hartwell, G. A. 1928

Vitamin B and Protein

Biochem. Jour. 22, P. 1212; (Yrbk. Brit. Pharm. Conf., 65 P. 671.

Describes experimental work done in which rats were fed a diet containing adestin and many of the rats died. At first it was thought that this was due to the toxic effect of edestin but this was disproved later. This toxic effect was overcome by increasing the amount of marmite in the diet. It was also found that the protective action of yeast extract was not destroyed by autoclaving at 120°C. for 4 1/2 -5 hrs.

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Hogan, A. G. & Hunter, J. E. 1928

Action of Ultra-Violet Rays on Vitamin B.

Proc. Am. Soc. Biol. Chem., 78, P. XVII; (Jour. Biol. Chem., 78, 78, P. XVII; Squibb Abstr. Bull., 1, No. 25, P. 21; Yrbk. A. Ph. A., 16-17, P. 1036)

Ultra-violet rays reduce appreciably the vitamin B activity. The ultra-violet rays did not effect the antineuritic activity but destroyed the growth-promoting activity. Taking these results into consideration, they claim that vitamin B is a mixture.

Hogan, A. G. & Hunter, J. E. 1928

The Plural Nature of Vitamin B.

Jour. Biol. Chem., 78, P. 433; (Yrbk. Brit. Pharm. Conf., 65, P. 483)

Made a study of the plural nature of vitamin B. They suggest that the growth-promoting factor be called vitamin F. and the antineuritic factor vitamin B.

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Hunt, C. H. 1928

Complex Nature of Vitamin B as Found in Wheat and Corn.

Jour. Biol. Chem., 78, P. 83; (Yrbk. Brit. Pharm. Conf., 65, P. 483; Yrbk. A. Ph. A., 16-17, P. 1036)

Found that wheat and corn contain approximately the same amount of vitamin F (antineuritic factor) and G (growth-promoting or antipellagra factor), but they are richer in vitamin F than in vitamin G.

Hunt, C. H. 1928

Vitamin B

Science, 67, P. 556; (Squibb Abstr. Bull, 1, No. 24, P. 25; Yrbk. A. Ph. A., 16-17, P. 1039)

A new factor in the vitamin B complex has been found. It is thermostable, insoluble in water, it activates the 2 other vitamins of the complex and causes greater growth than the other two alone.

Hunt, C. H. 1928

Vitamin B, Evidence that a Third Factor Exists.

Jour. Biol. Chem., 79, P. 793; (Yrbk. Brit. Pharm. Conf., 65, P. 671)

Made the observation that when vitamins F & G are fed separately to rats, the body weight is not maintained. Therefore it is his contention that a third factor exists in the original vitamin source and is water-soluble.

Hunwicke. **R. F.** 1928

Recent Advances in our Knowledge of Vitamins; Vitamin B.

Yrbk. Brit. Pharm. Conf., 65, P. 585.

Gives a general summary of the work that has been done on vitamin B so far.

The most important work that has been done so far is the breaking up of the vitamin B complex into B_1, thermolabile, the antineuritic factor and B_2, thermostable, preventive of pellagra.

Kinnersely, H. W. & Peters, R. A. 1928

Further Purification of Vitamin B, (curative) of Yeast.

Biochem. Jour., 22, P. 419; (Yrbk. Brit. Pharm. Conf., 65, P. 285.

Describe other methods of getting a higher concentration of Vitamin B, by using norite charcoal, improved technique of alcohol fractionation and precipitation by phosphotungstic acid.

Some of the properties of Vitamin B from yeast were studied.

Kucera, C. 1928

Variations de la teneur en vitamines B et C des graines de céréales au cours de la germination.

(Compt. rend. soc. biol., 99, P. 967) (Chem. Zentrlbl., 1929, V. 1, P. 2065; Jahresber. d. Pharm., 88-89, P. 291)

Discusses the amount of vitamins B & C present in the germ of wheat, rye, barley, and oats.

Levene, P. A. 1928

The Concentration of Vitamin B. ---IV. On the Concentration and the Separation of the Two Components of Vitamin B.

Jour. Biol. Chem., 79, P. 465; (Squibb Abstr. Bull. 1, No. 43, P. 17; Yrbk. A. Ph. A., 16-17, P. 1037; Yrbk. Brit. Pharm. Con., 65, P. 670)

Silica gel has the power of adsorbing both factors of vitamin B (heat stable, anti-pellagra factor; heat unstable, antineuritic factor) but it adsorbs the heat-unstable factor more readily; approximately 7 1/2 times more than it does the heat stable factor.

Mills, C. A. 1928

(Vitamin B Extract for Diabetes)

Am. Jour. Med Sci., 175, P. 376; (Brit. Med Jour. Epit., 1, P. 80; Yrbk. Brit. Pharm. Conf., 65, P. 474)

(States that vitamin B stimulates the utilization of glucose in the body and therefore can be used in the treatment of diabetes. He began work on the hypothesis that "the known influence on the rate of growth of children exercised by the vitamin may be due to this increased glucose absorption, and that a similar action may occur on the sugar in the blood of diabetic subjects")

The Original was not available.

Orr-Ewing, J. & Reader, V. 1928

Streptothrix Corallinus in the Estimation of Vitamin B_1.

Biochem. Jour., 22, P. 440; (Yrbk. Pharm. Conf., 65, P. 287)

Describe a quantitative test for the growth-promoting power of vitamin B in which the amount of S. corallinus present in varying concentrations of vitamin B is used as a basis. The test has been found capable, with certain limitations, of replacing the pigeon tests in following the fractionation of the vitamin.

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Peters, R. A. Kinnersely, H. W., Orr-Ewing, J. & Reader. V. 1928

The Relation of Vitamin B_1 to theGrowth-Promoting Factor for a Streptothrix.

Biochem. Jour., 22, P. 445; (Yrbk Brit. Pharm. Conf., 65, P. 286; Yrbk. A. Ph. A., 16-17, P. 1038)

Make an intensive study by parallel tests of two factors, the vitamin B curative for pigeons, and a bacterial growth stimulant for "Streptothrix corallinus. The experiments proved that the two factors were not identical.

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Randoin, L. & Lecoq, R. 1928

Recherches Comparative sur l'Élaboration des Vitamines B par les Levures cultivées sur extrait de malt. Sur mélasse de canne a sucre on sur melásse de betterave.

Compt. rend. soc. biol., 99, P. 47; (Squibb Abstr. Bull., 1, No. 27, P. 18; Yrbk. A. Ph. A., 16-17, P. 1037)

Yeast cultivated on malt extract and 50% glucides was more effective than the yeast prepared on malt extract alone.

Canned molasses was found to be two thirds as active as malt extract. It contains a large amount of the growth promoting factor and a small amount of the anti-neuritic factor.

Beets contain very little of the former.

Randoin, L. & Lecoq, R. 1928

Sur les vitamines hydro-solubles du groupe B. Existence probable d'un facteur thermostable et alcalinostable nécessaire à la vie.

Compt. Rend., 187, P. 60; (Yrbk. Brit. Pharm. Conf., 65 P. 483)

Separated the factors of vitamin B from Brewer's yeast and noted their effect on the growth and prolongation of life in pigeons. They used their own symbols for the factors.

Rosedale, J. L. & Oliveiro, C. J. 1928

Antineuritic Vitamin--II. Properties of the "Curative Substance".

Biochem. Jour., 22, P. 1362; (Yrbk. Brit., Pharm. Conf. 66, P. 162)

Showed that extracts of the antineuritic vitamin undergo alcoholic fermentation at room temperature, thus causing a large loss of the vitamin from the extract. Sterilization also destroys the vitamin.

By studying the enzymes in the alimentary canals of pigeons it was shown that the curative extract of rice polishings contain sucroclastic and lipoclastic enzymes, but the presence of proteoclastic enzymes could not be demonstrated.

In cases of "dry" beri-beri the pancreas were incapable of lipoclastic and triptic digestion.

Salmon, W. D., Guerrant, N. B. & Harp, I. M 1928

The Existence of Two Active Factors in Vitamin B Complex.

Jour. Biol. Chem., 76, P. 487; (Yrbk. Brit. Pharm. Conf. 65, P. 286)

Adopt the following terminology for vitamin B:

Goldberger's pellagra-preventing factor--P-P factor
The beri-beri-preventing factor B-P factor
The complex Vitamin B.

Also discuss the amount of each factor absorbed by Fuller's Earth from various vitamin B sources.

Williams, R. R. & Waterman, R. E. 1928

Tripartite Nature of Vitamin B

Jour. Biol. Chem., 78, P. 311; (Yrbk. Brit. Pharm. Conf., 65, P. 483; Squibb Abstr. Bull., 1, No. 3, P. 21; Yrbk. A. Ph. A., 16-17, P. 1040)

Claim that there is a third highly thermolabile factor in the vitamin B complex associated only with the maintenance of weight and general condition of adult pigeons. This third factor is not potent for rats. It is shown that this factor is not vitamin A, D, or E.

Aykroyd, W. A. & Roscoe, M. H. 1929

Distribution of Vitamin B_2.

Biochem. Jour., 23, P. 483; (Yrbk. Brit. Pharm. Conf., 66, P. 672)

Worked out a method of testing the quantity of vitamin B_2.

The results wheat and maize are poor sources of vitamin B . In wheat the germ and bran are richer than the endosperm. Dried peas are a very poor source. The following are good sources in the order named: dried ox liver, dried yeast, fresh milk, dried meat and dried egg yolk.

Chick, H. 1929

Effect of Nitrous Acid on Vitamin B_2.

Biochem. Jour., 23, P. 514; (Yrbk. Brit. Pharm. Conf., 66, P. 671)

Observed no destruction of vitamin B_2 when treated with nitrous acid which is contrary to the findings of Levene.

Chick, H. & Roscoe, M. H. 1929

A Method for the Assay of the Antineuritic Vitamin B_1 in which the Growth of Young Rats is used as a Criterion.

Biochem. Jour., 23, P. 498; (Quart. Jour. Pharm., 2, P. 671; Yrbk. A. Ph. A., 18, P. 192; Yrbk. Brit. Pharm. Conf., 66, P. 671)

An assay for vitamin B_1 using rats as test-animals is described. The basal diet contains vitamin B_2 from autoclaved yeast or egg-white. The amount of vitamin B_1 necessary to restore normal growth is determined.

Indications point to the presence of a third factor which is found in the yeast but not in the egg-white.

Chick. H. & Roscoe, M. H. 1929

An Attempt to Separate Vitamins B_1 and B_2 in Yeast.

Biochem. Jour., 23, P. 504; (Quart. Jour. Pharm., 2, P. 672; Yrbk. A. Ph. A., 18, P. 361)

State that vitamins B_1 and B_2 can be separated by Peter's process, but the entire separation isn't complete or some of both vitamins is destroyed. As a result, the process is not a very satisfactory one.

Evans, H. M. & Lepvovsky, S. 1929

The Sparing Action of Fat on Antineuritic Vitamin B.

Jour. Biol. Chem., 83, P. 269; (Yrbk. Brit. Pharm. Conf., 66, P. 498)

Proved that when fat is added to a regular vitamin diet a smaller quantity of vitamin B is required to maintain normal growth in rats. This "sparing action runs parallel with the amount (%) of fat added to the diet. They also proved that the fat contained no vitamin B.

Jansen, B. 1929

(Improvements in Methods of Isolating Anti-Beri-Beri Vitamin)

Rec. Trav. Chim., 48, P. 984; (Quart. Jour. Pharm., 2, P. 497; Yrbk. A. Ph. A., 18, P. 349)

(The synthetic substance $C_3N_2H_3CH_3CHOH \cdot CH_3$ which has the same formula as the anti-beriberi vitamin from bran is physiologically inactive.

In isolating the vitamin from bran the yield can be doubled by using silicotungstic acid and cadmium chloride instead of phosphotungstic acid and platinum chloride respectively)

The original was not available.

Kennedy, C. & Palmer, L. 1929

Heat and Ultra-Violet Irradiation as Means of Differentiating Vitamins B_1 and B_2 in Yeast.

Jour. Biol. Chem., 83, P. 493; (Yrbk. Brit. Pharm. Conf., 66, P. 672)

Claim that the statement by Hogan & Hunter that the antipellagric vitamin (B_2) of yeast is destroyed by ultra-violet irradiation leaving the antineuritic vitamin (B_1) intact, could not be confirmed. Autoclaving and irradiation destroy in varying amounts, both vitamins.

Plimmer, R. H. Ray, W. H. & Lowndes, J. 1929

Vitamin B Value of Foodstuffs.

Biochem. Jour., 23, P. 546; (Yrbk. Brit. Pharm. Conf., 66, P. 672)

Tested the vitamin value of various pulses and nuts. Taking the vitamin value of yeast as 100, the vitamin value of the following was:

Various Pulses	10-13
Peanuts & Hazel nuts	20
Almonds & Chestnuts	10
Coconuts	0

Reader, V. 1929

A Second Thermolabile Water-soluble Accessory Factor necessary for the Nutrition of the Rat.

Biochem. Jour., 23, P. 689; (Quart. Jour. Pharm., 2, P. 671; Yrbk. A. Ph. A., 18, P. 360; Yrbk. Brit. Pharm. Conf., 66, P. 671)

Indications point to the presence of a third factor,--the second thermolabile water-soluble factor which is necessary for the nutrition of especially the young rat.

It is more thermolabile than Vitamin B.

Chick, H. & Roscoe, M. H. 1930

Heat Stability of Vitamin B_2.

Biochem. Jour., 24, P. 105; (Yrbk. Brit. Pharm. Conf., 67, P. 557)

The stability of vitamin B_2 under various conditions such as autoclaving, ordinary heating and alkalinity was studied. A yeast extract prepared by using dilute acetic acid was found to be more suitable than the extract of the yeast itself. Also, this extract was found to be more stable toward heat.

Guerrant, N. B. & Salmon, W. D. 1930

Stability of Vitamin B_2 as Measured by its Growth-Promoting Effect.

Jour. Biol. Chem., 89, P. 199; (Yrbk. Brit. Pharm. Conf., 68, P. 156)

Yeast concentrates and syrups were prepared and treated under various conditions to test their stability. It was found that vitamin B_2 was comparatively stable.

Kinnersley, H. & Peters, R. 1930

The Relation of Hydrogen Ion Concentration to the Precipitation of Purified Torulin (Yeast Vitamin B_1) by Phosphotungstic Acid.

Biochem. Jour. 24, P. 1856; (Physiol. Abstr., 16, P. 319; Yrbk. A. Ph. A., 20-21, P. 176)

A relationship exists between hydrogen ion concentration and phospotungstic acid in the precipitation of vitamin B_1.

Narayanan, B. T. & Drummond, J. C. 1930

The Concentration of Vitamin B_2.

Biochem. Jour., 24, P. 19; (Analyst. 55, P. 403; Yrbk. A. Ph. A., 19, P. 203; Yrbk. Brit. Pharm. Conf., 67, P.556)

Experimented with several methods by which concentrates of vitamin B_2 could be prepared. Several of the methods are:

(1) Precipitation of vitamin B_2 by lead acetate.
(2) Adsorption of vitamin B_2 on Fuller's earth.
(3) Use of "Norite" charcoal.
(4) Fractionation by alcohol.
Vitamin B_2 is relatively insoluble in alcohol greater than 70%,

A few of the properties of vitamin B_2 is discussed.

Norris, E. R. & Church, A. E. 1930

Toxicity of Fish-Liver Oils and the Action of Vitamin B.

Jour. Biol. Chem., 89, P. 437; (Yrbk. Brit. Pharm. Conf., 68, P. 146; Yrbk. A. Ph. A. 19, P. 136)

A discussion of the toxic effects of cod-liver oils in doses constituting less than 2% of a diet. The results obtained in the experiments have a significance in the quantitative determinations of vitamins A and B.

Reader, V. 1930

Assay of Vitamin B_4 .

Biochem. Jour., 24, P. 1827; (Yrbk. Brit. Pharm. Conf., 68, P. 545)

Describes a method for the assay of vitamin B_4 . Difficulties arose when young rats were used for the assay due to the necessary prolonged storage period for vitamin B . Therefore old or adult rats had to be used. A process for the concentration of vitamin B_4 from distilling yeast was also described.

Reader, V. 1930

Further Evidence for a Third Factor Vitamin B.

Biochem. Jour., 24, P. 77; (Yrbk. Brit. Pharm. Conf., 67, P. 556)

Confirmed still further the presence of a third factor in vitamin B; namely, vitamin B_3 . When no further growth responces could be gotten in rats by using B_1 & B_2, & B_3 was fed and further growth resulted immediately. It was also found that B_2 was necessary to supplement the antineuritic vitamin. B_1 and B_3 produced no growth, but when B_2 was added, growth resumed again. The B_3 factor has been concentrated and obtained free from other factors.

Rowlands, M. J. & Wilkinson, B. 1930

Vitamin B Content of Grass Seeds in Relation to Manures.

Biochem. Jour., 24, P. 199; (Yrbk. Brit. Pharm. Conf., 67, P. 556)

Found that the vitamin B content of grass seeds from land which had been artificially manured with basic slag, kainite, and ammonium sulfate was distinctly inferior to the grass seeds from land manured with dung. State that the vitamin B content of the food depends on the amount of vitamin B in the land on which it was grown. A concentrate prepared from pig's dung showed quite a large amount of vitamin B.

Smith, M. I. 1930

A New Method of Evaluating the Potency of Antineuritic Concentrates.

Pub. Health Rep., No. 45, P. 116; (Yrbk. A. Ph. A., 19, P. 110)

A specific, rapid and reasonably accurate method for the assay of the antineuritic or thermolabile factor of the vitamin B complex is described.

Arnaudi, C. 1931

Sul parallelismo fra l'azione della fitasi e della cosidetta vitamina B nell'azione acceleratrice dello sviluppo di alcuni microrganismi.

Boll. Chim. fam., 70, P. 713; (Yrbk. A. Ph. A., 20-21, P. 493; Quart. Jour. Pharm & Pharmacol., 5, P. 146; Yrbk. Brit. Pharm. Conf., 69, P. 146)

It was found that highly purefied phytase had the same action in accelerating the growth of yeast and other micro-organisms as vitamin B.

Birch, T. W. & Guha, B. C. 1931

Chemical Nature of Vitamin B_1.

Biochem. Jour., 25, P. 1391; (Yrbk. Brit. Pharm. Conf. 69, P. 111)

Studied the chemical nature of vitamin B, using the electrolysis method. Found that vitamin B, behaves as a base ever at the pH of 8.5, but the pK value could not be estimated due to the presence of ionized impurities in the solutions.

Bourquin, A. & Sherman, H. C. 1931

Quantitative Determination of Vitamin G (B_2).

Jour. Am. Chem. Soc., 53, P. 3501; (Yrbk. A. Ph. A., 20-21, P. 113)

The definition for the "unit" of vitamin B is given as: "that amount which when fed as a daily allowance induces a gain of 3 Gm. per week in an experimental animal standardized as described and fed a basal ration which is sufficiently freed from vitamin G to result in loss of weight during the test period."

A quantitative procedure for the determination of vitamin G has not been perfected enough to be used as a standard.

Chase, E. F. & Sherman, H. C. 1931

A quantitative Study of the Determination of the Antineuritic Vitamin B.

Jour. Am. Chem. Soc., 53, P.3506; (Yrbk. A. Ph. A., 20-21, P. 111)

Developed a biological method for the quantitative determination of vitamin B.

A "unit" of vitamin B is defined as: "that amount which, when fed as a daily allowance to a standard test animal (rat), under such conditions as have been indicated, will suffice to support three grams per week of gain in weight during an experimental period of n. l. t. four n or m. t. eight weeks."

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Gilroy, E. 1931

Vitamin B Content of Liver Extracts and Stomach Preparations.

Lancet, 221, P. 1093; (Brit. Pharm. Conf., 69, P. 154)

Eleven commercial liver extracts and four stomach preparations were tested for their ability to promote growth in young rats on a diet deficient in all water-soluble vitamins. Nine of the liver and three of the stomach preparations gave excellent growth.

The others that failed were known to contain only traces of the antineuritic vitamin.

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Graber, H. T. & Cowles, R. A. 1931

The Biological Assay of the Water-Soluble Anti-neuritic and Antipellagric Vitamins.

Jour. Am. Pharm. Assoc., 20, P. 876; (Yrbk. A. Ph. A., 20-21, P. 113)

The methods for the assay of the antineuritic and antipellagric vitamins are described.

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Guha, B. C. 1931

Physiological Function of Vitamin B_1.

Biochem. Jour., 25, P. 1367; (Yrbk. Brit. Pharm. Conf. 68, P. 670)

Piebald rats were fed a diet consisting of vitamin B_1, carbohydrate and protein. It was found that the requirement of vitamin B_1 was independent of the carbohydrate protein ratio. Lard had definite effect on vitamin B_1 but palm kernel oil and olive oil had little effect. The injection of sodium lactate into the syslem forming lactic acid is concerned with the productions of beri-

beri. Addition of vitamin B_1 stopped this.

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Guha, B. C. 1931

Sources, Stability and Chemistry of Vitamin B_2.

Biochem. Jour., 25, P. 945; (Yrbk. Brit. Pharm. Conf., 68, P. 635)

The amount of vitamin B_2 present in various sources (baker's yeast, brewer's yeast) milk powder, extract of beef muscle, extract of fresh ox-liver, etc. were described. The stability of various vitamin B_2 preparations when autoclaved were discussed. The action of various chemicals on vitamin B_2 was recorded.

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Guha, B. C. 1931

Vitamin B_2 Potency of Commercial Liver Extract.

Lance, 220, P. 864; (Yrbk. Brit. Pharm. Conf., 68, P. 659)

Commercial liver extract is superior to yeast as a source of vitamin B_2 in many ways. It is richer in vitamin B_2, contains less vitamin B_1, is easier to handle, nearly all the vitamin B_2 in it can be extracted with cold water and is rich in both the curative factor for pernicious anemia and the pellagra curative factor.

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Guha, B. C. 1931

Vitamin B_1; Preparation of Concentrates from Yeast.

Biochem. Jour., 25, P. 931; (Yrbk. Brit. Pharm. Conf., 68, P. 634)

The procedure for the preparation of concentrated vitamin B_1 from yeast was described. An aqueous extract of brewer's top yeast was found to be richer in vitamin B_1 than the extract of baker's yeast so it was used as the starting material in the preparation of the vitamin B_1 concentrate.

Plimmer, R. H., Raymond, W. H. & Lowndes, J. 1931

Vitamin B, of Fruits and Vegetables.

Biochem. Jour., 25, P. 1788; (Yrbk. Brit. Pharm. Conf., 69, P. 155)

A series of common fruits and vegetables were tested for vitamin B, by their ability to maintain pigeons. Vegetable leaves had a higher vitamin B content than fruits or vegetable roots. The results:

Brussell Sprouts, Runner Beans -contain very little vitamin B
of the Rts. & Tubers;
Artichokes, Leeks, Parsnips & Potatoes -contain some
Beetroot, Swedes, Carrots & Turnips -contain very little.

Fruits and vegetables contain less vitamin B, than the cereals and pulses.

In conclusion, fruits and vegetables have no important value as sources of vitamin B, in the human dietary.

Seidell, A. & Birckner, V. 1931

Experiments on the Isolation of the Antineuritic Vitamin.

Jour. Am. Chem. Soc., 53, P. 2288; (Yrbk. A. Ph. A., 20-21, P. 173)

Experiments on the isolation of the antineuritic vitamin from yeast are discussed. The authors outlined their procedure as:

(1) the preparation of the "activated solid"
(2) extraction & concentration of the vitamin solution
(3) Benzoylation and acetone precipitation of the salts.
(4) extraction and acetone precipitation of the vitamin concentrate.

Windaus, A. & Raquer, F. 1931

(Über die Reindarstellung des Vitamins B,)

Nachr. Ges. Wiss. Gottingen, 1931, P. 207; (Pharm. Ztg., 77, P. 165; Yrbk. Brit. Pharm. Conf., 69, P. 708)

(The substance isolated from yeast was found to be 3 times as active against polyneuritis as the strongest preparation previously obtained. The crystals had a

melting point of 229°C. and the formula $C_{12}H_{17}N_3OS$. It is soluble in water and alsohol and insoluble in ether and acetone.)

The original was not available.

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1931

Watermelon for Vitamins

Drugg. Circ., 95, Sept., P. 46.

Discusses the vitamin content of watermelons as they contain detectable amounts of vitamin B.

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Barnes, H. O'Brien, J. R. & Reader, V. 1932

Vitamin B_4.

Biochem. Jour., 26, P. 2035; (Yrbk. Brit. Pharm. Conf., 70, P. 265)

A method of preparing crystals of vitamin B_4 is given. The imperical formula for these crystals is $C_4H_4N_4 \cdot HCL \cdot 1/2\ H_2O$. It is not certain that crystals prepared by this method can be considered as pure vitamin B .

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Block, R. J. & Cowgill, G. R. 1932

Preparation of Concentrates of Vitamin B_1.

Jour. Biol. Chem., 89, P. 637; (Yrbk. Brit. Pharm. Conf. 70, P. 151)

A method for the preparation of vitamin B_1 concentrates from an aqueous extract of rice polishings is discussed by the authors. The method described is used to the best advantage in preparing on small scale concentrates of vitamin B_1.

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Carmalt, Jones, D. W. 1932

Vitamin B in Oedema

Brit. Med. Jour., 1932, 1, P. 374; (Yrbk. Brit. Pharm. Conf., 70, P. 151)

Marmite and tiki-tiki have been successfully used in the treatment of oedema with tiki-tiki being the most active.

(Commission) 1932

International Vitamin Standards Report of the Permanent Commission on Biological Standardization.

Leaugue of Nations Health Organization; Conference on Vitamin Standards, Report No. C. H. 1056 (1) Annex, IV. C. H. 1055; (Yrbk. Brit. Pharm. Conf., 69, P. 623)

International vitamin standards were set for vitamins A, D, B and C at a conference on vitamins representing Denmark, France, Holland, Germany, Great Britain, Norway, Sweden and United States.

The international standard for the antineuritic vitamin B is to be known as the "standard adsorption product of the antineuritic vitamin B" It was prepared from rice husks in the Medical Laboratory, Batavia, Java by the method of Seidell. Definition of the Unit- the unit is 10 mg. of international adsorption product. The standard preparation is kept at the National Institution of Medical Research, London which is the central laboratory of the Health Organization of the League of Nations. This standard should be used until enough advancement has be made to make the revision of the vitamin standard necessary.

Guha, B. C. 1932

The Synthesis of Vitamin B and "Bios" by Bacillus Vulgatus.

Indian Jour. Med. Research, 19, P. 977; (Squibb Abstr. Bull., 5, AP349; Yrbk. A. Ph. A., 20-21, P. 503)

Bacillus vulgatus synthesized vitamin B, but the amount synthesized was not large enough to be of any advantage over other ordinary methods of fractionation which started with yeast.

Guha, B. C. & Chakravoity, P. N. 1932

Photochemical Synthesis of Vitamin B_1.

Nature, London, 130, P. 741; (Yrbk. Brit. Pharm. Conf. 70, P. 151)

Claim that vitamin B_1 can be produced by ultraviolet irradiation of adenine sulfate, while quinine chloride can not be activated.

Halliday, N. 1932

Further Evidence for the Existence of Vitamin B_4.

Jour. Biol. Chem., 96, P. 479; (Yrbk. Brit. Pharm. Conf., 69, P. 745)

Describes extensive experiments on rats which gave further evidence for the existence of vitamin B_4. The rats were fed on a diet which failed to produce growth. The rats were then fed whole wheat, thought to be very good source for vitamin B_4, and the rats advanced steadily in growth.

Tschesche, R. 1932

Die Darstellung von krystallisiertem Anti-Beriberi-Vitamin aus Hefe.

Chem. Ztg., 56, P. 166; (Analyst, 57, P. 327; Yrbk. Brit. Pharm. Conf., 69, P. 707)

A method of preparing crystalline vitamin B_1 from autolysed brewer yeast is given.

Van Veen, A. G. 1932

Die Empirische Formel des Antineuritischen Vitamins.

Trav. Chim. Pays-Bas., 51, P. 265; (Yrbk. Brit. Pharm. Conf., 69, P. 708)

By an improvement in the method of isolation of vitamin B_1 it was possible to obtain comparatively large yields from active clay. The yields were in the form of the hydrochloride of very high purity. The empirical values are:

C -------- 40.5--41.5%
N -------- 15.0--15.6%
H -------- 5.75- 6.0%

The empirical formulas are either of:
$C_6H_{10}N_2O_2 \cdot HCL$ or $C_{13}H_{20}N_4O_5 \cdot 2HCL$
The former is the preferable formula.

Van Veen, A. G. 1932

Die Eigenschaften des Antineuritischen Vitamins der Resikleie.

Rec. Trav. Chim. Pays-Bas., 51, P. 279; (Yrbk. Brit. Pharm. Conf., 69, P. 708)

The hydrochloride of the pure vitamin obtained from rice generally contains excess of hydrochloric acid, which is difficult to remove, but favors the stability of the preparation.

With this as a basis, the author describes many of the chemical properties of vitamin B.

Coward, H. H., Burn, J. H., Ling, H. W. & Morgan, B. G. E. 1933

The Determination of the Antineuritic Vitamin

Biochem. Jour., 27, P. 1719; (Squibb Abstr. Bull., 7, A, P. 95; Yrbk. A. Ph. A., 23, P. 109)

Gives description, discussion and statistical analysis for two new methods of assaying vitamin B_1 : (1) by observing the cure of head retraction in B_1 - avitaminotic pigeons and (2) observing the growth of vitamin B_1 depleted rats.

Assay of soft yeast extracts give good results but dried yeast does not.

Heard, R. D. Kinnersley, H. W. O'Brien, J. R., Peters, R. A. & Reader, V. 1933

Vitamin B_4 and Adenine

Nature, London, 131, P. 617; (Yrbk. Brit. Pharm. Conf., 70, P. 742)

It was shown that crystals of vitamin B_4 and adenine hydrochloride cannot be the same although the crystals with vitamin B_4 consist largely of adenine.

Kinnersley, H. W., O'Brien, J. R. & Peters, R. A. 1933

Crystalline Preparations of Vitamin B_1 from Baker's Yeast.

Biochem. Jour. 27, P. 232; (Yrbk. Brit. Pharm. Conf., 70, P. 710; Analyst, 58, P. 488; Yrbk. A. Ph. A., 22, P. 237)

Describe a relatively simple process for the preparation of crystalline vitamin B_1 from the acid extracts of "active" charcoals made from baker's yeast extracts. The chemical composition and absorption spectra of crystals prepared by this method vary so much that it is believed that these crystals are not pure vitamin B_1.

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Kinnersley, H. W. O'Brien, J. R., Peters, R. A. & Reader, V. 1933

Large Scale Preparation of Vitamins B_1 and B_4.

Biochem. Jour. 27, P. 225; (Yrbk. Brit. Pharm. Conf., 70, P. 709)

Give the procedure for the preparation of large quantities of vitamins B_1 & B_4 from baker's yeast. Norite charcoal solution at a pH. of 1.0 is used to absorb vitamin B_4 while norite charcoal solution at pH 7.00 absorbs vitamin B_1.

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Kuhn, R., Rudy, H. & Wagner-Jauregg, T. 1933

Über Lacto-Flavin (Vitamin B_2)

Ber. d. d., Chem. Gesell. 66, P. 1950; (Squibb Abstr. Bull., 7, A, P. 163; Yrbk. A. Ph. A., 23, P. 221)

Through the decomposition of vitamin B the composition of the vitamin has been identified with that of lacto-flavin. The decomposition of vitamin B and the formula for lacto-flavin is given.

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Lecoq, R. 1933

Proteides et vitamines B - I. Le rôle des vitamines B et de l'equilibre alimentaire dans l'utilisation des proteides par l'organisme.

Bull. d. Sci. pharmacol., 40, P. 470; (Yrbk. A. Ph. A. 22, P. 121)

Pigeons, kept on a vitamin deficient diet in which carbohydrates was replaced by muscle peptone, survived longer than those which were kept on a diet containing carbohydrates.

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Seidell, A. 1933

Extraction of Vitamin B_1 from Dried Yeast

Jour. Biol. Chem., 100, P. 195; (Yrbk. Brit. Pharm. Conf., 70, P. 601)

Prepared vitamin B_1 from dried yeast. In doing so, showed that various commercial dried yeasts vary a great deal as to their vitamin B_1 content.

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Seidell, A. & Smith, M. I. 1933

Crystalline Antineuritic Vitamin (B_1) Obtained with the Aid of Picrolonic Acid.

Jour. Am. Chem. Soc., 55, P. 3380; (Brit. Pharm. Conf. 70, P. 710; Yrbk. A. Ph. A., 22, P. 230)

A method for the preparation of vitamin B_1 from brewer's yeast is described. The picrolonate deposit, when purified by recrystallization from methyl alcohol, are curative for polyneuritic rats in doses of 0.015 mg.

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Smith, M. I. 1933

Differential Extraction of Vitamin B_1 and B_2 from Dried Yeast.

Jour. Biol. Chem., 100, P. 225; (Yrbk. Brit. Pharm. Conf., 70, P. 601)

Tried to prepare pure preparations of vitamins B_1 & B_2 by differential extraction of the vitamins from dried yeast. It was very difficult to obtain a solution of one vitamin which did not contain any of the other.

Spruyt, J. P. 1933

Een chemische methode voorde keuring van rijst op het gehalte aan anti-neuritisch (B_1) vitamine.

Pharm. Tydschr. v. Ned.-Ind., 10. P. 219; (Yrbk. Brit. Pharm. Conf., 70, P. 692)

The vitamin B content of rice may be judged from its content of pericarp. Gives a detailed description of the method he followed in the determination of the vitamin B content of rice.

Sure, B. 1933

Vitamin B_1 and Irradiated Adenine Sulfate

Biochem. Jour., 27, P. 2043; (Yrbk. Brit. Pharm. Conf., 71, P. 285)

Proved that irradiated adenine sulfate was not the same as vitamin B_1. When irradiated adenine sulfate was given to test animals, they exhibited no advance in growth, while vitamin B_1 caused a marked advance in growth.

Tschirche, R. 1933

Uber das Vitamin B_4.

Ber. d. d. Chem. Gesell., 66, P. 581; (Jahresber. d. Pharm., 92,-93, P. 286)

It is possible that vitamin B_4 is identical to adenin-ribosid. The hydrochloride & picrate of both are identical, and the free bases sublime at the same temperature.

Van Veen, A. G. 1933

(Vitamin B_1 Content of Rice)

Geneesk. Tydschr. voor Ned.-Ind., 73, 15, P. 945; (Pharm. Tydschr. v. Ned.-Ind., 10, P. 302)(Yrbk. Brit. Pharm. Conf., 71, P. 135)

(The use of unpolished rice is to be recommended rather than that of the slightly polished. Parboiling

does not destroy much of the vitamin and also the parboiled rice keeps well and tastes much better than unpolished rice.)

The original was not available.

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Wheeler, G. A. 1933

The Pellagra-Preventive Value of Autoclaved Dried Yeast, Canned Flaked Haddock, and Canned Green Peas.

Public Health Reports, 48, P. 67; (Squibb Abstr. Bull., 6, A, P. 122; Yrbk. A. Ph. A., 22, P. 91)

It was found that dried autoclaved baker's yeast is good source of the pellagra preventive factor, canned flaked haddock yields too small amounts to be used, and canned green peas are good source.

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Booher, L. E. 1934

Concentration and Chemical Nature of Vitamin B_2.

Jour. Biol. Chem., 107, P. 591;(Yrbk. Brit. Pharm. Conf., 72, P. 276)

Whey powder of low lactose content can be concentrated to 200 to 200 times the activity of the original. It is an orange-red hygroscopic powder, green fluorescence in solution, stable toward acids & heat, alkali-labile.

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Booher, L. E., Blodgett, H. M., & Page, J. W. 1934

Growth-Promoting Properties of Vitamin B_2 Concentrates.

Jour. Biol. Chem., 107, P. 599; (Yrbk. Brit. Pharm. Conf. 72, P. 276)

Vitamin B_2 is more effective in promoting growth than is a mixture of vitamins B_1 and B_2.

Cowgill, G. R. & Gilman, A. 1934

Effect of Lack of Vitamin B on Gastric Secretion

Arch. Intern. Med., 53, P. 58; (Yrbk. Brit. Pharm. Conf. 71, P. 757)

A lack of vitamin B in dogs resulted either in the decrease in the flow of the gastric juice or the development of sever nervous symptoms. The injection of vitamin B rapidly restored this system to its normal function.

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Day, P. L. 1934

The Extractibility of Vitamin G (B_2) from Yeast by Various Acetone-Water and Methyl Alcohol-Water Mixtures.

Jour. Am. Chem. Soc., 56, P. 452; (Yrbk. A. Ph. A., 23, P. 222)

Acetone-water solvents extracted a relatively large amount of vitamin G from air dried baker's yeast.

80% & 95% acetone extracted little vitamin G, 60% acetone extracted about 50%.

Absolute methyl alcohol extracted little vitamin G, 80% alcohol extracted about 20% and 60% alcohol about 50%.

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Kinnersley, H. W. & Peters, R. A. 1934

The Formaldehyde-Azo Test for Vitamin B_1.

Biochem. Jour., 28, P. 667;(Yrbk. Brit. Pharm. Conf., 72, P. 560; Chem. Zentrlbl.1934, 2, P. 969; Jahresber. d. Pharm., 96, P. 314)

The formaldehyde-azo-test for vitamin B_1 is described; The limit of sensitivity is 1 pigeon unit or approximately 1.5-2.0λ of crystals. The test is very specific, especially for pure fractions and for the highly potent preparations.

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Kuhn, R. & Weygand, F. 1934

Synthetisches Vitamin B_2.

Ber. d. d. Chem. Gessell. 67, P. 2084; (Yrbk. Brit. Pharm. Conf., 72, P. 561)

Synthetic 6:7-dimethyl-9-l araboflavin, $C_{17}H_{20}N_4O_6$ possesses approximately the same growth promoting properties as vitamin B_2.

The closely related compound $C_{15}H_{16}N_4O_6$ is inactive.

Lecoq, R. 1934

(Experimental Investigations on Vitamin B in their Relations to Glucosides, Proteins and Lipids of Diet)

Bull. soc. sci. hyg. aliment., 22, P. 278; (Pharm. Austr., 1, P. 60)

(Absence of vitamins B in presence of glucoside, proteins or lipids produced attacks of polynuritis in pigeons. The specific nature of glucosides, proteins and lipids exert considerable influence on the rate of evolution of total avitaminosis B and also on the dose of vitamins B required to maintain the birds in a satisfactory physiological condition.)

The original was not available.

Riggs, L. K., Chiego, B. J. G., Sampson, W. L. & Beaty, A. 1934

Assay for Vitamin B Complex in the Presence of Interfering Substances.

Jour. A. Ph. A., 23, P. 191; (Yrbk. Brit. Pharm. Conf., 71, P. 731; Yrbk. A. Ph. A., 23, P. 109)

Work on an assay method of vitamin B complex under the following headings:

(1) test for restoration of normal rate of growth
(2) physical standards of reference
(3) assay of food material which animals do not eat readily
(4) animal experience.

A method was developed in which each animal was used as its own control.

Van Veen, A. G. 1934

Activity of Crystalline Preparations of Vitamin B

Nature, London, 133, P. 137; (Yrbk. Brit. Pharm. Conf., 71, P. 625)

Vitamin B preparations prepared by various methods were tested as to their activity, using Javan rice-birds as the experimental animals.

Ammerman, M. & Waterman, R. E. 1935

Studies of Crystalline Vitamin B.-IV. Injection Method of Assay.

Jour Nutrition, 10, P. 25; (Squibb Abstr. Bull., 8, A, P. 1019; Pharm. Abstr., 1, P. 248)

Discusses the injection method for the assay of vitamin B using the rat as the test animal.

Buchman, E. R. & Williams, R. R. 1935

Studies of Crystalline Vitamin B - IX. Action of Concentrated Hydrochloric Acid.

Jour. Am. Chem. Soc., 57, P. 1751; (Pharm. Abstr., 2, P. 27)

Treatment of crystalline vitamin B with concentrated hydrochloric acid converted the vitamin to a compound having similar properties but different formula in which the -NH group was hydrolyzed and an OH was replaced by Cl. This proved the existence of an aliphatic hydroxyl group in the vitamin. The new product was not active physiologically.

Buchman,E.R., Williams, R. R. & Keresztesy, J. C.

Studies of Crystalline Vitamin B_1.- X. Sulphite Cleavage.- 111. Chemistry of the Basic Product.

Jour. Am. Chem. Soc., 57, P.1849; (Pharm. Abstr., 2, P. 88)

Discusses the chemistry of the basic product obtained in the cleavage of vitamin B with sodium sulfite.

The base is thought to be a tertiary heterocyclic compound with a beta-hydroxyethyl side chain-- $C_4H_4NS-CH_2CH_2OH$. Claim that the vitamin is a quaternary salt of this base.

Clark, H. T. & Gurin, S. 1935

Studies of Crystalline Vitamin B_1. -XII. The Sulphur-Containing Moiety.

Jour. Am. Chem. Soc., 57, P. 1876; (Pharm. Abstr., 2, P. 88)

The base $C_4H_4NS-CH_2-CH_2OH$, formed by the sulphite cleavage of crystalline vitamin B_1, is shown to be 4-methyl-5-beta-hydroxy-ethylthiazole, and exists in the vitamin as a quaternary salt.

Chick, H., Copping, A. M. & Edgar, C. E. 1935

The Water-Soluble B-Vitamins-IV. The Components of Vitamin B_2.

Biochem. Jour., 29, P. 722; (Quart. Jour. Pharm. Pharmacol., 8, P. 560; Pharm. Abstr., 2, P. 200)

Found that there are other factors in addition to the flavins which are capable of promoting growth.

Guha, B. C. & Biswas, H. G. 1935

Reno-flavin und Vitamin B_2.

Ber. d. d. Pharm. Gesell., 68, P. 427; (Pharm. Abstr. 2, P. 199)

The reno-flavins, obtained as an extract from beef kidneys do not cure rats suffering from avitaminosis B while small quantities of fresh beef kidney extracts improves the general growth.
Discuss the reasons for this action.

Hermano, A. J. & Eubanas, F. 1935

The Treatment of Human Beriberi with Crystalline Vitamin B.

Philippine Jour. Sci., 56, P. 277; (Pharm. Abstr., 2 P. 69)

Out of 12 cases of beriberi, crystalline vitamin B hydrochloride cured 7, partially cured 3 and cured 2 cases in conjunction with tikitiki extract.

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Holiday, E. R. 1935

A Note on the Ultraviolet Absorption of Crystalline Preparations of Vitamin B_1.

Biochem. Jour., 29, P. 718; (Jahresber. d. Pharm., 96 P. 314; Quart. Jour. Pharm. Pharmacol., 8, P. 721; Pharm. Abstr., 2, P. 200; Yrbk. Brit. Pharm. Conf., 72, P. 721)

Discusses the variations in the ultraviolet absorption of crystalline preparations of vitamin B. The purest samples of crystalline vitamin B_1 in acid alcohol all show selective absorption with a maximum at 245-247 $m\mu$.

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Kinnersley, H. W., O'Brien, J. R. & Peters, R. A. 1935

Fluorescent Oxidation Products of Vitamin B_1.

Biochem. Jour., 29, P. 2369; (Yrbk. Brit. Pharm. Conf., 73, P. 596)

Examined the fluorescent oxidation products of vitamin B_1. Also carried out many chemical test with vitamin B_1 and the results are discussed.

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Kinnersley, H. W., O'Brien, J. R. & Peters, R. A. 1935

Crystalline Vitamin B_1.

Biochem. Jour., 29, P. 701; (Yrbk. Brit. Pharm. Conf., 73, P. 136)

Made samples of crystalline vitamin B_1 using the methods introduced by various workers. It was found that all the samples had the same fundamental physical & chemical properties.

Arrived at a working empirical formula for Vitamin B_1 :

$$C_{12}H_{18}O_2N_4S, 2HCl.$$

Kuhn, R. & Kaltschmitt, H. 1935

Über den Zustand des Vitamins B_2 in der Kuhmilch.

Ber. d. d. Pharm. Gesell., 68, P. 386; (Pharm. Abstr., 1, P. 61)

Vitamin B_2 present in cows' milk as lacto-flavin. It is found free and not as an ester.

Kuhn, R. & Kaltschmitt, H. 1935

Isolierung von Lacto-flavin (Vitamin B_2) aus heu.

Ber. d. d. Pharm. Gesell., 68, P. 128; (Pharm. Abstr., 1, P. 58; Chem. Zentrlbl., 1935, I, P. 1398; Jahresber. d. Pharm., 94-95, P. 328)

Wanted to find out whether the lacto-flavin present in the hay reached the liver and mammary glands of the cow unchanged or whether they were changed during the assimilation.

Lacto-flavin was isolated from hay and it was found to have the same formula as that found in milk.

Kuhn, R. & Rudy, H. 1935

Synthetische Vitamin-B_2-Phosphorsäure.

Ber. d. d. Pharm. Gesell., 68, P. 383; (Pharm. Abstr., P. 61)

Experiment was carried out to prove whether the vitamin B_2 is found in its free dialyzable form, as phosphoric acid ester, or whether there is a difference in metabolism between flavin and phosphoric acid flavin.

The phosphoric acid ester of lacto-flavin has the same color and fluorescence as that of lacto-flavin. The pH (7.17) of the synthetic vitamin B_2-phosphoric acid is the same as that of the "yellow ferment" but differs from that of lacto-flavin (pH 3-pH9)

Moggridge, R. C. G. & Ogston, A. G. 1935

The Potentiometric Titration of Solutions of Vitamin B .

Biochem. Jour., 29, P. 866; (Squibb Abstr. Bull., 8 A, P. 824; Pharm. Abstr., 2, P. 46)

Discusses the potentiometric titration of the hydrochloride of vitamin B_1. Both a hydrogen and a glass electrode were used, with the latter giving more reliable and more reproducible results.

Ruehle, A. E. 1935

Studies of Crystalline Vitamin B_1 - XIII. Ultraviolet Absorption of Some Derivatives of the Basic Cleavage Product and their Synthetic Analogs.

Jour. Am. Chem. Soc., 57, P. 1887; (Pharm. Abstr., 2, P. 88)

By means of ultraviolet absorption shows that the basic cleavage product of vitamin and some of its derivatives are similar to the thiazoles and their derivatives.

Schopfer, W. H. 1935

Un test végétal pour la vitamine B_1.

Zeit Vitaminforsch, 4, P. 67-75; Chem. Zentrlbl., 1935, 1, 2395; Jahresber. d. Pharm., 94-95, P. 328)

A fungus of the family Mucorineen (Phycomyces blakesleeanus) does not thrive on artificial medium. It needs very little for growth & as a result the author suggests that it be used for testing for vitamin B_1.

Stuart, E. H. (to Eli Lilly and Co.) 1935

Process of Obtaining Vitamin B_1.

U. S. Patent 1,990,961, Feb. 12, 1935; (Pharm. Abstr., 1, P. 117)

Vitamin B_1 may be removed by the use of hydrochloric or sulfuric acid solution of a concentration of at least 5%. The use of alcohol facilitates the removal and the acid solution can be partially neutralized. to a pH of 5 or 7.

Van Eekelen, M. & Emmerie, A. 1935

(Die Quantitative Bestimmung von Hepaflavin (Vitamin B_2))

Acta Brevia Nederl. Physiol. Pharmacol. Microbiol., 5, P. 77; (Chem. Zentrlbl., 1936, V. 1, P. 1650; Jahresber. d. Pharm., 94-95, P. 399)

(Describes a method for the quantitative determination of hepaflavin (Vitamin B_2).)
The original was not available.

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Vogt-Möller, P. 1935

(Relation of Vitamin B in Foodstuffs)
Bidrag til Sporsmaalet om Relationen mellen B-Vitaminerne og Ernäringens Indhold of Protein, og Kulhydrat.

(Lancet, 113, P. 275; Pharm. Abstr., 1, P. 117)

Summary of the book:
(Investigated the relationship between the B-vitamins and the protein, fat and carbohydrate content of food. Vitamin B_1 ($+B_4$) bears a quantitive relationship to the carbohydrate content and vitamin B_2 bears a quantitive relationship to the fat content and possibly the protein content.)
The original was not available.

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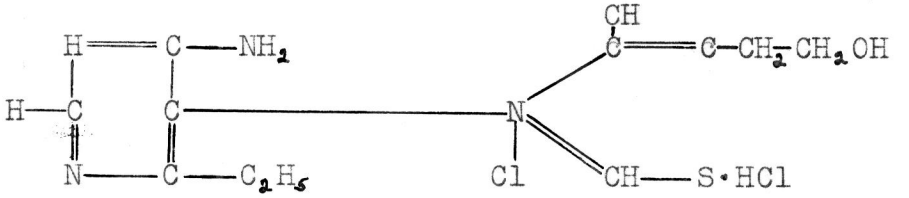
Williams, R. R. 1935

Structure of Vitamin B.

Jour. Am. Chem. Soc., 57, P. 229; (Yrbk. Brit. Pharm. Conf., 72, P. 559)

Vitamin B on treatment with sulfite is split up quantitatively into:
(1) C_6H_9N SO - 6 - aminopyrimidine sulphonic acid
(2) C_6H_9NSO - 4 - methylthiazole - 5 - carboxylic acid
These facts support the view that vitamin B is a quaternary base, with the structure formula of the hydrochloride being:



Williams, R. R., Buchman, E. R. & Ruehle, A. E. 1935

Studies of Crystalline Vitamin B_1 - VIII. Sulphite Cleavage - II Chemistry of the Acidic Product

Jour. Am. Chem. Soc., 57, P. 1093; (Pharm. Abstr., 1, P. 164)

Discusses the chemistry of the acidic product obtained in the cleavage of vitamin B_1 with sodium sulphite.

Williams, R. R. Waterman, R. E., Keresztesy, J. C. & Buchman, E. R. 1935

Studies of Crystalline Vitamin B - III. Cleavage of Vitamin B with Sulphite.

Jour. Am. Chem. Soc., 57, P. 536; (Pharm. Abstr., 1, P. 61; Yrbk. Brit. Pharm. Conf., 72, P. 559)

Vitamin B was teated with sodium sulphite solution at a pH of 4.8-5.0 and the sulphite content at 2.6N. Cleavage was completed at room temperature in 24 to 48 hours, and at steam bath temperature in 1 hour or less. A sparingly soluble acidic product, $C_6H_9N_3SO$ and a chloroform-soluble base C_6H_9NSO were obtained.

Wintersteiner, O., Williams, R. R. & Ruehle, A. E. 1935

Composition and Ultraviolet Absorption of Vitamin B_1.

Jour. Am. Chem. Soc., V. 57, P. 517; (Yrbk. Brit. Pharm. Conf., 72, P. 560)

The empirical formula-$C_{12}H_{16}N_4OS$, 2HCl-for vitamin B_1 was decided upon after analyzing 5 samples of vitamin B_1. Six samples, 3 dissolved in alcohol and 3 in water, gave ultraviolet absorption bands at 235 μ and 267 μ.

Wintersteiner, O., Williams, R. & Ruehle, A. E. 1935

Studies of Crystalline Vitamin B_1 - II Elementary Composition and Ultraviolet Absorption.

Jour. Am. Chem., Soc., 57, P. 517; (Pharm. Abstr., 1, P. 61)

The hydrochloride of vitamin B has the following formula: $C_{12}H_{16}ON_4S \cdot 2HCl$.

The ultraviolet absorption occurs in 2 bands at 235 mμ and 276 mμ.

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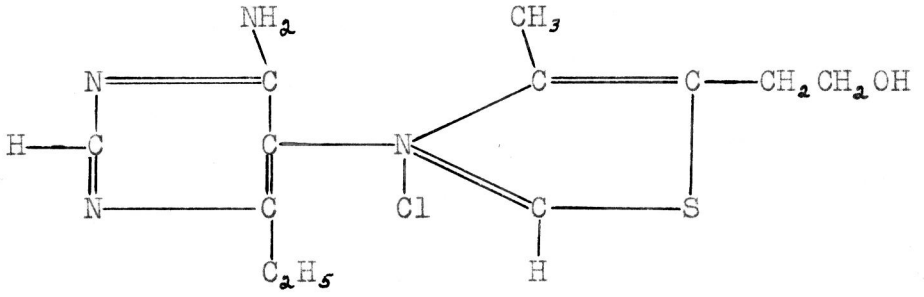
Vitamin B

Merck Report, 44, No. 2, P. 13-14; (Pharm. Abstr., 1, P. 116)

Gives a brief review of the literature pertaining to vitamin B. A probable structural formula for vitamin B is given as follows:



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Ansbacher, S., Supplee, G. T. & Bender, R. T. 1936

Lactoflavin, a Necessary Growth-Promoting Dietary Factor.

Jour. Nutrit., 11, P. 401-409; (Chem. Zent., 2, P. 1568)

Lactoflavin is a necessary growth-promoting dietary factor. Describes the determination of the growth-promoting factors. The potency is 150,000 units per gram. However the "unit" may be meaningless or erroneous.

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Awe, D. 1936

Die Neuesten Ergebnisse der Vitaminforschung (Vitamine B_1 und D_3).

Deutsche Apotheker- Zeitung, 51, P. 1178; (Jahresber. d. Pharm., 96, P. 313; Chem. Zentrlbl., 1936, 2, P. 3306)

Summarizes talks by R. Grewe about Vitamin B_1, by A. Windaus about the antineuritic vitamin and by H. Brockmann about the preparation of vitamin D_3 from tuna fish liver.

Birch, T. W. & Gyorgy, P. 1936

Preparation and Properties of Vitamin B_6.

Biochem. Jour., 30, P. 304; (Yrbk. Brit., Pharm. Conf., 73, P. 730)

Vitamin B_6 is that part of the vitamin B_2 complex which cures the "acrodynia-like" dermatitis developing in ratsfed on vitamin B free diet supplemented with purified vitamin B_1 and lactoflavin.

Fresh fish muscle and wheat germ are good sources of vitamin B_6.

Some of the properties of vitamin B_6 are also discussed.

Harris, L. J. and Leong, P. C. 1936

Excretion of Vitamin B in Human Urine.

Lancet, 230, P. 886-(Pharm. Abstr., 2, P. 309)

Discusses the relationship of vitamin B in the urine. It was shown that the output varies with the dietary intake.

Kuhn, R. 1936

Laktoflavin (Vitamin B_2)

Angewandte Chemie, 49, P. 6.; (Chem. Zentrlbl., 1936 V. 1, P. 2370; Jahresber. d. Pharm., 96, P. 313)

Discusses the decomposition and synthesis of the lactoflavins (vitamin B_2). The importance of lactoflavins as vitamins, pro-ferment, co-ferment and ferment is also discussed.

Peters, R. A. 1936

Biochemical Lesion in Deficiency of Vitamin B_1.

Lancet, 230, P. 1161; (Pharm. Abstr., 2, P. 367)

There is a defect in the power of oxidizing certain carbohydrate intermediates in the central nervous system; the most important substances concerned with avitaminosis are lactic and pyruvic acids; of these the biochemical lesion "is most closely related to the oxidation of pyruvic acid. Additional amounts of crystalline vitamin B_1 "in vitro" to the avitaminous brain tissues restores the diminished tissue respiration. This procedure can be used as an assay for vitamin B_1.

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Prebluda, H. I. & Mc Collum, E. V. 1936

A Chemical Reagent for the Detection and Estimation of Vitamin B_1.

Science, 84, P. 488; (Chem. Zentrlbl., 1937, 1, P. 127; Jahresber., d. Pharm., 96, P. 314)

Certain derivatives of aniline or the naphthyl amines have the property of producing characteristic colorations with solutions of vitamin B_1. Therefore the above preparations would provide a means of qualitative as well as quantitative estimation of the vitamin in foodstuffs or biological preparations.

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Schöberl, A. 1936

(Uber Aneurin.)

Zeit. ges. Naturwiss., Naturphilos., Gesch., Naturwiss. Med., 2, P. 129; (Chem. Zentrlbl., 1936, V. 2, P. 3306; Jahresber. d. Pharm., 96, P. 313)

(Summarizes a report on vitamin B_1; discusses the relationship of the antineuritic vitamin with thiochromate.)

The original was not available.

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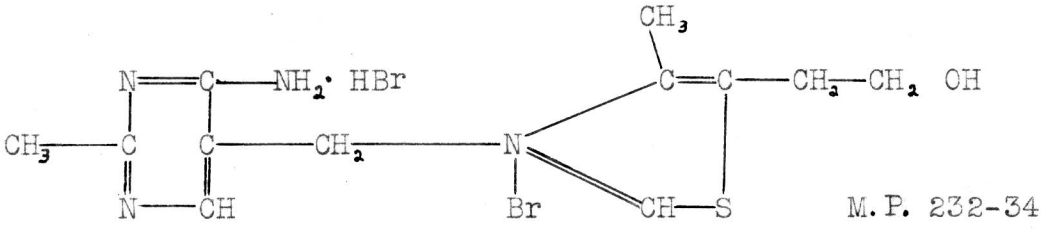
Williams, R. R. & Cline, J. K. 1936

Synthesis of Vitamin B_1.

Jour. Am. Chem. Soc., 58, P. 1504; (Yrbk. Brit. Pharm. Conf., 73, P. 730)

A substance with the following structural formula has been synthesized:



M.P. 232-34

Informing the chloride of the above, the resulting substance is identical with natural vitamin B_1 in composition, ultraviolet adsorption and anti-neuritic potency.

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1936

Betabion - Synthetic - Vitamin B_1.

Am. Jour. Pharm., 108, P. 464.

The Research Laboratories of Merck & Co. prepared a synthetic preparation of pure vitamin B_1 in the form of the bromide which is identical to the natural crystalline vitamin B_1.

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