BIBLIOGRAPHY OF VITAMIN D

by

ROBERT CHARLES VOIGT

A Thesis Submitted for the Degree of

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(Pharmacy)

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McCollum, E. & Davis, M. 1913

The Necessity of Certain Lipins in the Diet During Growth.

Jour. Biol. Chem., 15, p. 167.

Discuss the growth promoting properties of extract of egg or butter, but draw no conclusion as to what the stimulating factor is.

Osborne, T. & Mendel, L. 1918

Nutritive Factors in Animal Tissues.

Jour. Biol. Chem., 34, p. 17.

Tell in what parts of the animal body the fat-soluble vitamins may be found.

Mellanby, E. 1919

An Experimental Investigation on

Lancet, 1919, v. 1, p. 407.

Discusses generally the disease rickets and the effect of diet upon it.

Emmett, A. 1921

The Physiological Value of the Vitamins.

Jour. Am. Pharm. Assoc., 10, p. 177.

Only one form, vitamin A, is designated by McCollum as fat-soluble. Mellanby suggests there may be another related to dental caries.

Sherman, H. & Pappenheimer, A. 1921

Experimental Rickets in Rats.

Jour. Exper. Med., 34, p. 189.

Discuss rickets in rats and the effect of diet in causing the disease to occur.

Shipley, P. & Park, E. 1921

Studies in Experimental Rickets.

Jour. Biol. Chem., 45, p. 343.

Describes the effect of cod liver oil administered to rats affected with experimental rickets.

Bogert, L. & Trail, R. 1922

Studies in Inorganic Metabolism.

Jour. Biol. Chem., 54, p. 387.

Suggest that of the vitamin content of yeast or butter fat exerts influence on calcium assimilation.

Heaton, T. 1922

On the Vitamin D.

Biochem. Jour., 16, 800. (Yrbk. A. Ph. A., 12, p. 302; Jahresbericht der Pharm., 83, p. 148; Analyst. 48, p. 185.)

Discuss the properties of Wildier's "bios", indicating that it may belong to the vitamin group. Funk calls it vitamin D.

McCann, G. & Barnett, M. 1922

Experimental Rickets in Rats.

Jour. Biol. Chem., 54, p. 203.

Give information relative to the distribution of phosphorus and calcium in the bodies of rats on rachitic and non-rachitic diets.

Funk, C. & Dubin, H. 1923

Progress in Vitamin Research.

Jour. A. Ph. A., 12, p. 1078.

Offer evidence of the existence of five vitamins. States that what had been known as vitamin B really included another vitamin named vitamin D. Its function in metabolism is not yet known.

Gaessler, W. & McCandlish, A. 1923

A Study of the Calcium Balance of Dairy Cows.

Jour. Biol. Chem., 56, p. 663.

The findings after experimentation with cow feeds indicate the presence of a vitamin in green leaves which influences calcium assimilation.

Goldblatt, H. & Soames, K. 1923

Light and the Fat-Soluble Factor.

Biochem. Jour., 17, p. 622.

Discuss the effect of the fat-soluble organic factor on calcification after irradiation.

Steenboch, H., Jones, J. & Hart, E. 1923

Antirachitic Vitamin.

Jour. Pharm. & Exper. Therap., 58, p. 383. (Yrbk. A. Ph. A., 13, p. 317.)

Show that the ether extract of cod liver oil is as efficacious as the untreated oil.

Block, C. 1924

Deficiency in Fat-Soluble Vitamin A.

Am. Jour. Diseases Children, 28, p. 659.

Holds that vitamin A is not the antirachitic factor in cod liver oil as was first suspected.

Boas, M. & Chick, H. 1924

Anti-Rachitic Properties of Cow's Milk.

Biochem. Jour., 18, p. 433.

Gives information concerning the diet and mangement of cows and the influence on the anti-rachitic value of the milk.

Soames, K. 1924

Intraperitoneal Injection of Cod Liver Oil.

Biochem. Jour., 18, p. 1349.

Gives results on the anti-rachitic and growth value of cod liver oil when injected intraperitoneally.

Fantus, B. 1925

New Light on Cod Liver Oil.

Jour. A. Ph. A., 14, p. 592.

States that the anti-rachitic factor D was at first indistinguishable from vitamin A as both are oil-soluble and accur in cod liver oil. E. A. Park of Johns Hopkins showed by limited oxidation of cod liver oil that vitamin A could be destroyed but not vitamin D.

Hess, G., Weinstock, M. & Helman, D. 1925

The Antirachitic Value of Irradiated Phytosterol and Cholesterol.

Jour. Biol. Chem., 63, p. 305. (Yrbk. A. Ph. A., 14, p. 305.)

Advance a hypothesis regarding ultra-violet irradiation of cholesterol in the skin.

Hess, A. & Weinstock, M. 1925

A Further Report on Imparting Antirachitic Properties to Inactive Substances by Ultra-Violet Irradiation.

Jour. Biol. Chem., 63, p. 25.

Name various substances which develop antirachitic properites upon irradiation.

Hess, A. & Weinstock, M. 1925

Vitamins.

Jour. Biol. Chem., 63, p. 81. (Yrbk. A. Ph. A., 14, p. 304.)

Discuss the effect of irradiated cholesterol and phytosterol in preventing rickets.

Steenbock, h., Black, A., Nelson, E., Nelson, M. & Hoppert, C. 1925

Antirachitic Activation by Light.

Jour. Biol. Chem., 63, p. 25.

Lists various substances that can be activated antirachitically by ultra-violet light.

Steenbock, H. & Black, A. 1925

Fat Soluble Vitamins.

Jour. Biol. Chem., 64, p. 263.

List various substances that can be activated by irradiation and discuss the means of irradiation.

Steenbock, H., Hart, E., Hoppert, C. & Black, A. 1925

Vitamins.

Jour. Biol. Chem., 66, p. 441. (Yrbk. A. Ph. A., 14, p. 306.)

The antirachitic property of milk and its increase by direct irradiation and by irradiation of the animal.

Boas, M. 1926

The Anti-Rachitic Value of Winter Spinach.

Biochem. Jour., 20, p. 13.

Reviews the observed influence of fresh green winter spinach upon the retention of calcium and phosphorus in rats.

Carr, F. 1926

Vitamins in Their Relation to Medical Supplies.

Pharm. Jour., 117, p. 729. (Yrbk. A. Ph. A., 15, p. 325.)

Shows the direct relationship between vitamin D deficiency and defective calcificaion.

Chick, H. 1926

Biological Assay of Fat-Soluble Vitamins.

Biochem. Jour., 20, p. 119.

Reveals sources of error that might enter into the technique employed for the biological assay of fat-soluble vitamins.

Chick, H.& Roscoe, M. 1926

The Anti-Rachitic Value of Fresh Spinach.

Biochem. Jour., 20, p. 137.

Discuss the antirachitic properties of spinach.

Griesy, P. 1926

Vitamins A and D.

Jour. A. Ph. A., 15, p. 312.

Reviews research done on vitamins, particularly vitamins A and D which cod liver oil supplies. Also discusses methods of insuring an oil more palatable and high in vitamin content.

Kramer, B. & Co-Workers. 1926

Cod Liver Oil Concentrate.

Jour. Biol. Chem., 71, p. 699.

Discuss the value of cod liver oil as an antirachitic agent when injected subcutaneously.

Kramer, B., Shear, M. & Shelling, D. 1926

Fractionation of Irradiated Cholesterol.

Jour. Biol. Chem., 71, p. 221.

Demonstrate the antirachitic potency of various fractions of cholestrol.

Jephcott, H. & Bacharach, A. 1926

Rapid and Reliable Test for Vitamin D.

Biochem. Jour., 20, p. 1351. (Yrbk. A. Ph. A., 16, p. 862; Analyst, 52, p. 243.)

Describe experiments showing the effect of antirachitic substances on the pH of the fecal matter of rats. Establish an antirachitic unit.

Smith, H. & Chick, H. 1926

Standard Rats.

Biochem. Jour., 20, p. 131.

Describe a diet for the maintenance of a standardized breed of young rats for work upon fat-soluble vitamins.

Willimott, St. & Wokes, F. 1926

The Antirachitic Vitamin D of Cod Liver Oil.

Pharm. Jour., 117, p. 473 & 495. (Chem. Centralbl., 1926, v. 1, p. 310; Jahresber. der Pharmaz., 86, p. 230.)

Gives information relating to the study of the effects of vitamin D on bone-growth and changes in the blood.

Anon. 1927

Antirachitic Vitamin.

Drugg. Circ., 71, p. 351. (Yrbk. A. Ph. A., 16, p. 512.)

Differentiates between animal and phytosterines and the provitamin. The latter being present as an "impurity".

Funk, L. & Lecoq, R. 1927

(Über verschiedene Hefeextrakte und ihren Inhalt an Vitamin D.)

Comp. de Soc. Biologie, 97, p. 440. (Lancet, 1927, v. 2, p. 1482; Jahresberie. der Pharmaz., 87, p. 177.)

(A discussion of various yeast extracts and their vitamin D content.)

György, P. 1927

(Vitamin D.--Production by Irradiation.)

Klin. Wochensch. (Yrbk. A. Ph. A., 16, p. 509; Schweiz. Apoth. Ztg., 65, p. 349.)

(The work of Windaus led to the production of the synthetic vitamin upon a commercial basis which is marketed in Germany under the name of Vigantol.)

Hart, E., Steenbock, H. & Scott, H. 1927

Dietary Factors Influencing Calcium Assimilation.

Jour. Biol. Chem., 73, p. 59.

Find that ultra-violet light has little, if any, direct influence upon the calcium and phosphorus metabolism of dairy cows.

Heilbron, J. & Co-Workers. 1927

Absorption Bands of Ergosterol and Vitamin D.

Chem. & Drugg., 107, p. 813. (Yrbk. A. Ph. A., 16, p. 510.)

Gives information as to the proper light for the irradiation of vitamin D.

Hess, A. 1927

Antirachitic Activity of Irradiated Cholesterol, Ergosterol and Allied Substances.

Jour. Am. Med. Assoc., 89, p. 337. (Yrbk. A. Ph. A., 16, p. 512; Pharm. Jour., 119, p. 697.)

Discuss the use of irradiated dried milk and other substances which yield vitamin D on irradiation.

Hess, A. & Sherman, E. 1927

The Antirachitic Value of Irradiated Cholesterol and Phytosterol.

Jour. Biol. Chem., 73, p. 145.

Show that irradiated cholesterol when added to a rickets-producing ration which is low in phosphorus increases the retention of phosphorus and calcium.

Hess, A. 1927

Vitamin D.

Jour. A. Ph. A., 16, p. 322.

Reaches the conclusion that vitamin D is formed when certain sterols are exposed to ultra-violet light.

Hess, A. & Anderson, R. 1927

The Antirachitic Value of Irradiated Cholesterol and Phytosterol.

Jour. Biol. Chem., 74, p. 651.

Give procedures for the acivation of sterol fractions of substance by ultra-violet light.

Kamm, E. 1927

Über das Antirachitische Vitasterin.

Phar. Zent., 68, p. 209. (Yrbk. A. Ph. A., 16, p. 512.)

Speculates on the probable presence of substance in the animal body that becomes anti-rachitic by the action of ultra-violet rays.

Morton, R., Heilbron, J. & Kamm, E. 1927

The Absorption Spectrum of Ergosterol in Relation to the Photo-synthetic Formation of Vitamin D.

Jour. Chem. Soc., 1927, p. 2000. (Yrbk. A. Ph. A., 16, p. 510; Pharm. Jour., 119, p. 341.)

Discusses the problem of screening harmful radiations and its bearing on the industrial production of vitamin D.

Rosenheim, O. & Webster, T. 1927

Relation of Cholesterol to Vitamin D.

Biochem. Jour., 21, p. 127. (Yrbk. A. Ph. A., 16-17, p. 1045; Analyst, 52, p. 293.)

Give experimental evidence to show that the provitamin D may possibly be allied to cholesterol.

Rosenheim, O. & Webster, T. 1927

The Relation of Cholesterol to Vitamin D.

Biochem. Jour., 21, p. 127. (Yrbk. A. Ph. A., 16, p. 510; Chem.

& Drugg., 106, p. 372.)

Show that the provitamin has a slightly higher carbon content than cholesterol. State that ergosterol or a similar sterol is the parent substance.

Rosenheim, O. & Webster, T. 1927

The Sources of Supply of Vitamins A and D.

Nature, 120, p. 440. (Yrbk. A. Ph. A., 16-17, p. 505; Chem. & Drugg., 107, p. 812.)

Direct attention to a number of easily accessible sources of vitamins A and D.

Rosenheim, O. & Webster, T. 1927

The Stomach Oil of the Fulmar Petrel.

Biochem. Jour., 21, p. 111.

Find vitamin D in the stomach oil of the Australian mutton bird.

Rosenheim, O. & Webster, T. 1927

Vitamin D.--Production by Irradiation.

Jour. Soc. Chem. Ind., 46, p. 159. (Yrbk. A. Ph. A., 16, p. 509.)

In an editorial state that the vitamin D formed in cholesterol upon irradiation is not from the cholesterol but from a substance usually associated with it.

Shear, M. 1927

A Color Reaction of Vitamin D.

Biol. Chem., 69, p. 511. (Lancet, 1927, v. 1, p. 1698; Jahresberich. der Pharmaz., 87, p. 176.)

Describes a Color reaction of vitamin D, using an acid salt of an aniline solution.

Willimott, S. & Wokes, F. 1927

Vitamins A and D of Spinach.

Biochem. Jour., 21, p. 887. (Yrbk. A. Ph. A., 16, p. 1048; Analyst, 52, p. 652.)

Prepare an extract of spinach 200 times as concentrated as the fresh leaves and increase greatly in the vitamin D content by treating it with ultra-violet light.

Wokes, F. & Willimott, S. 1927

Detection and Estimation of Vitamin A and Vitamin D.

Chem. & Drugg., 107, p. 30. (Yrbk. A. Ph. A., 16, p. 505.)

Gives an assay for detecting and estimating vitamins A and D.

Wokes, F. & Willimott, S. 1927

The Detection and Extimation of Vitamin A and of Vitamin D in Cod Liver Oil and Various Food Products.

Phar. Jour., 118, p. 752. (Chem. Centralbl., 1927, v. 2, p. 1288; Jahresber. der Pharmaz., 87, p. 175.)

Describe a method of determing vitamin D quantitatively by determing the pH of the feces of rats.

Adams, G. & McCollum, E. 1928

A Method for the Biological Assay of Cod Liver Oil.

Jour. Biol. Chem., 78, p. 495.

Describe a method of assay of cod liver oil but which irradiates only the relative potency.

Anon. 1928

Clinical Evidence of Hypervitaminosis with Vitamin D.

Lancet, 106, p. 827.

Symtoms of hypervitaminosis are described. Express is the opinion that it would take a daily dose of 100 mg. of irradiated ergosterol to cause the condition in man.

Anon. 1928

Vitamin D in Liver of Dog Fish Salmon.

Jour. A. Ph. A., 17, p. 144.

Scientists at Prince Rupert fisheries experimental station, Canada, confirm preliminary experiments on the vitamin D content in dog fish liver oil.

Bacharach, A. 1928

Growth Promoting Properties of Vitamin D.

Quart. Jour. Pharm., 1, p. 49. (Yrbk, A. Ph. A., 17, p. 1043; Squible Abstr. Bull., 1, No. 29, p. 21.)

Discusses the effects on rats of vitamin D in various bases minus vitamin A.

Bacharach, A. & Smith, E. 1928

Some Notes on the Chemistry of the Fat-Soluble Vitamins in Cod Liver Oil.

Quart. Jour. Pharm., 1, p. 539. (Jahresberich der Pharmaz., 89, p. 292.)

Discuss the association of vitamin D with vitamin A in cod liver oil.

Bilk, C. & Honeywell, E. 1928

Antiracketic Substances.

Jour. Biol. Chem., 80, p. 15.

Raise the question as to whether the vitamin D properties

of ergosterol might be due to a contaminant as was the case with cholesterol.

Bilk, D., Honeywell, E. & Cox, W. 1928

Antiracketic Substances.

Jour. Biol. Chem., 80, p. 557.

Find that along with the formation of vitamin D by light there is formed a substance with a molecular configuration like that of isoergosterol which appears to be destroyed upon oxidation.

Clare, J. & Soames, K. 1928

Relative Content of the Fat-Soluble Vitamins A and D in a Series of Cod Liver Oils.

Lancet, 214, p. 150. (Yrbk. A. Ph. A., 17, p. 1048; Analyst, 53, p. 168.)

Present a discussion of the relationship of vitamin A to vitamin D in cod liver oil.

Coward, K. 1928

Antirachitic Vitamin in Cod Liver Oil.

Quart. Jour. Pharm., 1, p. 534. (Yrbk. A. Ph. A., 18, p. 350; Analyst, 54, p. 302.)

Discusses the variations in amounts of vitamin D in different samples of cod liver oil, milk and butter.

Coward, K. 1928

Minimum Amount of Vitamin D Required for a Positive Antirachitic Effect in the "Line" Test.

Biochem. Jour., 22, p. 1221. (Yrbk. A. Ph. A., 17, p. 1044; Squibb Abstr. Bull., 48, p. 21.)

Give a chart of irradiated ergosterol in mg. of various

daily doses with the observed resultant effect in calcification on rachitic rats.

Coward, K. 1928

Method of Assay of the Antirachitic Vitamin D.

Quart. Jour. Pharm., 1, p. 27. (Yrbk. A. Ph. A., 17, p. 1044; Squibb's Abstr. Bull., 1, No. 29, p. 22.)

Emphasizes the importance of using rats of the same litter for comparing the effect of ergosterol.

Harrison, R., Peacock, R, & Wright, S. 1928

Action of X-Radiation Upon Vitamin A in Activated Ergosterol.

Biol. Chem. Jour., 22, p. 1138. (Yrbk. A. Ph. A., 17, p. 1041; Analyst, 53, p. 667.)

Results of experimentation with x-rays on activated ergosterol are reported.

Hart, M. & Co-Workers. 1928

Calcium Balance.

Jour. Biol. Chem., 76, p. 143.

Male adult rats upon an acidotic calcium-deficient diet upon taking 12 c.c. cod liver oil daily failed to show an increased tendency to calcium, phosphorus or magnesium retention.

Jephcott, H. & Bacharach, A. 1928

The Quantitative Estimation of Vitamin D.

Biochem. Jour., 22, p. 60. (Yrbk. A. Ph. A., 17, p. 1045; Chem. & Drugg., 109, p. 394.)

Submit a graph showing curve of vitamin D effect on fecal pH.

Marcus, J. 1928

A New Process for the Separation of the Vitamin Fraction from Cod Liver Oil.

Jour. Biol. Chem., 80, p. 9. (Jahresberich. der Pharmaz., 89, p. 291; Chem., 1, p. 3049.)

Describe 2 new methods for isolating the vitamin fraction from cod liver oil.

Marcus, J. 1928

Vitamin Fraction of Cod Liver Oil.

Jour. Biol. Chem., 80, p. 9.

Describes in detail a new process for the separation of the vitamin fraction from cod liver oil, stating that its applicability is still being investigated.

Poulsson, E. & Lövenskiold, H. 1928

Quantitative Determination of Vitamin D.

Biochem. Jour., 22, p. 135. (Yrbk. A. Ph. A. 16, 17, p. 1045; Lanas, 1928, v. 2, p. 1801.)

The chief factors of the method are that the same rats are used for the preparatory period as well as for the rest of the test period.

Sexton, W. 1928

Color Reactions of Substances Containing Vitamin D.

Biochem. Jour., 22, p. 1133. (Yrbk. A. Ph. A., 17, p. 1099; Analyst, 53, p. 667.)

Color test tried on various ketones are described. As a result of these tests the vitamin might be considered to be ketonic in nature.

Soames, K. & Leigh, Claire, J. 1928

Assay of Vitamin D.

Biochem. Jour., 22, p. 522. (Yrbk. A. Ph. A., 17, p. 1042.)

Describe experiments to discover an adequate vitamin A diet unaccompaniet by vitamin D. Rats were used.

Steigmann, A. 1928

Reaktionen des Bestrahlten Ergosterins.

Kolloid=Zeit, 45, p. 165. (Jahresberich. der Pharmaz, 88, p. 139; Lancet, 1928, v. 2, p. 1220.)

Various color tests of vitamin D with other substances are given. Irradiated ergosterol is used.

Stoelzner, W. 1928

Eine Chemische Reaktion auf Antirachitisches Vitamin.

Münch. Med. Woch., 75, p. 1584. (Lancet, 1928, v. 2, p. 2036; Jahresberich. der Pharmaz., 89, p. 294.)

Give a color test on a 1% solution of vitamin D in olive oil by using phosphorus pentoxide.

Sure, B. 1928

Dietary Requirements for Fertility and Lactation.

Jour. Biol. Chem., 76, p. 659.

From detailed quantitative experiments no evidence could be obtained of the existence of a specific vitamin essential for lactation other than vitamins A and D.

Van Wijk, A. & Reerink, E. 1928

Vitamin D and Iso-Ergosterol.

Nature, 122, p. 648. (Yrbk. A. Ph. A., 18, p. 361; Quart. Jour. Pharm., v. 2, p. 123.)

Compares the absorption spectra of irradiated ergosterol and unirradiated iso-ergosterol.

Webster, T. & Bourdillon, R. 1928

The Irradiation of Ergosterol.

Biochem. Jour., 22, p. 1223. (Yrbk, A. Ph. A., 18, p. 352; Analyst, 54, p. 52.)

Attempts to isolate vitamin D are continued by preparing more concentrated preparations of vitamin D.

Anon. 1929

Cod Liver Oil or Viosterol for Nursing Mother.

Jour. Amer. Med. Assoc., 93, p. 1582.

Confirms the advisability of giving an extra supply of vitamin D to both infant and mother.

Anon. 1929

Diet and Dental Caries.

Jour. Amer. Med. Assoc., 93, p. 1974.

Suggest the possibility that dental caries is controllable by the administration of sufficient vitamin D.

Anon. 1929

The Name is Viosterol.

Jour. Amer. Med. Assoc., 93, p. 1066.

Discusses the name "Viosterol", it having been accepted by the Council on Pharmacy and Chemistry.

Anon. 1929

Thyroid Metabolism, Iodine, and Vitamins.

Lancet, 107, p. 57.

Discusses the effect of vitamins A and D on the iodine metabolism of the body, emphasising the need of further work along this line.

Anon. 1929

Viosterol.

Jour. Amer. Med. Assoc., 93, p. 693.

Emphasize that viosterol does not contain vitamin A and that large doses may result in harm from hypercalcemia.

Anon. 1929

Vitamin D and Milk.

Jour. Amer. Med. Assoc., 93, p. 1386.

Cite experiments which reemphasize the importance of an adequate allowance of vitamin D in the diet at every stage of life.

Bacharach, A. & Jephcott, H. 1929

Vitamin D and Fecal Reaction.

Jour. Biol. Chem., 82, p. 751.

Find a continued useful application for the assay of vitamin D based upon examination of the fecal pH of rats on a rachitogenic diet.

Barelli, L. 1929

Growth of Cancer in Mice Following Administration of Viosterol.

Jour. Amer. Med. Assoc., 93, p. 1349.

Reports that the growth of adenocarpcinomas in mice is inhibited by administration of viosterol.

Bauer, W. & Marble, A. 1929

Mode of Action of Viosterol.

Jour. Amer. Med. Assoc., 93, p. 1764.

Results of experiments would seem to conclude that viosterol increases the amount of calcium which is absorbed from the intestinal tract.

Blunt, K. & Cowan, R. 1929

Distribution of Vitamin D.

Jour. Amer. Med. Assoc., 93, p. 1219.

Point out the fact that vitamin D is by far the most limited in distribution of all the known vitamins. Fish oils, egg yolk and butter fat being practically the only natural sources.

Blunt, K. & Cowan, R. 1929

Do Adults Need Vitamin D?

Jour. Amer. Med. Assoc., 93, p. 1141.

Adults react differently toward attempts to increase calcification with vitamin D than do children in that they do not retain the calcium as well.

Blunt, K. & Cowan, R. 1929

Irradiated Ergosterol and the Chemistry of Vitamin D.

Jour. Amer. Med. Assoc., 93, p. 1303.

Emphasize that the toxic effects produced by enormous doses of vitamin D should not discourage the rational use of the vitamin since it is of such great therapeutic value.

Bond, C. 1929

Mode of Action of Viosterol on Myelin Forms of Lecithin.

Jour. Amer. Med. Assoc., 93, p. 1027.

Suggests that viosterol exerts its influence primarily on the lipoid rather than on the protein elements of the cell. On this basis he gives an explanation of the mode of action of vitamin D in rickets.

Cartland, G. & Co-Workers 1929

Effects of Excessive Doses of Viosterol in Growing Rats and Dogs.

Jour. Amer. Med. Assoc., 93, p. 1023.

An increase of vitamin D in the diet of normal growing rats and dogs, up to a thousand times the minimum effective dose produces no harmful effect on any of the animal tissues.

Coward, K. 1929

Recent Reasearch on the Vitamins.

Am. Jour. Pharm., 101, p. 145. (Yrbk. A. Ph. A., 18, p. 362.)

States definitely that ergosterol is the provitamin of vitamin D.

Coward, K. 1929

The Value of Irradiated Milk.

Lancet, 107, p. 1090.

Emphasis that the antirachitic values of different samples of irradiated milk vary greatly and that untreated milk contains almost no antirachitic vitamin.

Flury, F. 1929

Vitamin D, Standardization.

Jour. A. Ph. A., 18, p. 647.

Reports the investigation of the antirachitic action of

margarines contining varying amounts of irradiated ergosterol. The healing of rachitic control animals was demonstrated confirming the antirachitic value of radiostol as 10,000 units per cc.

Forschner, H. & Hottinger, A. 1929

Zur Trage der Spezifischen Reaktion auf D=Vitamin mit Phosphorpentoznd.

Münch. Med. Woc., 76, p. 156. (Jahresberich. der Pharmaz., 89, p. 294; Chem. Centralbl., 1929, 1, p. 2801.)

Question the reaction of vitamin D with P_2O_5 as being an exculsive one and cite othersubstances giving the same test.

Greenwald, I. & Gross, J. 1929

Prevention of Tetany.

Jour. Biol. Chem., 82, p. 505.

The administration of cod liver oil stimulates parathyroid tissue to increased activity. Several factors varying this action are discussed.

György, P. 1929

Harmful Effects of Overdosage of Irradiated Ergosterol.

Jour. Amer. Med. Assoc., 93, p. 81.

Points out that lack of appetite, vomiting and loss of weight occur as first symptoms of intoxication by viosterol. Standardization of viosterol preparations is stressed to prevent overdosage.

Hess, A., Lewis, J. & Rivkin, H. 1929

The Status of the Therapeutics of Irradiated Ergosterol.

Jour. Amer. Med. Assoc., 93, p. 661.

Verify the value of viosterol in the treatment of rickets, tetany and osteomatacia. Warn against the danger of hypercalcemia, advocating strict laboratory control of viosterol products.

Heuser, G. & Norris, L. 1929

Effect of Heat and Exposure to Air on Stability of Vitamin D.

Jour. Amer. Med. Assoc., 93, p. 1335.

Results indicate that vitamin D is not stable when heated and exposed to the air.

Hückel, R. & Wenzel, H. 1929

Changes in Arteries in Poisoning with Viosterol.

Jour. Amer. Med. Assoc., 93, p. 1427.

Point out the possibility of damage to the arteries by administering viosterol. Stress that only minute quantities produce injury to the wall of the aorta and arteries of the kidney.

Light, R., Miller., G. & Frey, C. 1929

Studies on the Effects of Overdosage of Vitamin D.

Jour. Biol. Chem., 84, p. 487.

Find that excessive amounts of vitamin D cause drainage of mineral constituents from the body with greater elimination of phosphorus than of calcium.

Mancke, R. 1929

Experimental Arteriosclerosis Due to Ergosterol.

Jour. Amer. Med. Assoc., 93, p. 340.

Produces with regularity and ease marked calcification of the aorta by administering ergosterol to rabbits, a direct proportion existing between the administration and aortic involvement.

Marrain, A. & Siegl, J. 1929

Treatment of Rickets with Irradiated Milk.

Jour. Amer. Med. Assoc., 93, p. 1850.

Direct attention to the fact that with the aid of various antirachitic agents rickets may be prevented. Find irradiated milk to be just as effective as other antirachitic agents.

McClendon, S. 1929

Yeast and Irradiated Ergosterol in the Treatment of Acrodynia.

Jour. Amer. Med. Assoc., 93, p. 455.

Describes a case which seems to give strong evidence that acrodynia is a vitamin deficiency disease. Viosterol employed proved highly beneficial.

Mellanby, E., Surie, E. & Harrison, D. 1929

Vitamin D in Ergot of Rye.

Biochem. Jour., 23, p. 710. (Yrbk. A. Ph. A., 18, p. 360; Analyst, 54, p. 766.)

Lists evidence that ergot is a powerful stimulus to calcification of bone. The substance responsible has properties similar to vitamin D.

Mouriquand, G. & Leulier, A. 1929

Antirachitic Action of Irradiated Snail Lipids.

Jour. Amer. Med. Assoc., 93, p. 1844.

Stress the value of irradiated snail lipids as a substitute for viosterol, which has proved to be toxic in certain instances.

Mussehl, F. 1929

Viosterol in Rickets.

Jour. Amer. Med. Assoc., 95, p. 1281.

Questions the intelligence of using rats in rachitic experiments with vitamin D since their living in the dark has evolved a much lesser vitamin D requirement.

Pickering, E. 1929

A Literature Review on the Production of Antirachitic Substances by the irradiation Process.

Jour. Am. Ph. Assoc., 18, p. 359. (Jahresberich. der Pharmaz., 89, p. 291; Chem. Centralbl., 1929, v. 7, p. 2576.)

Presents a review of the literature on the formation of antirachitic products by means of irradiation.

Russell, W. 1929

The Effect of the Curing Process upon the Vitamin A and D Content in Alfalfa.

Jour. Biol. Chem., 85, p. 289. (Yrbk. A. Ph. A., 18, p. 361.)

Find that artificially cured plants contain less vitamin D than those plants dried in the sun. Those dried in the sun have less vitamin A.

Schlutz, F. & Ziegler, M. 1929

Is Irradiated Farina as Bought in the Market Enriched with Vitamin D?

Jour. Amer. Med. Assoc., 93, p. 1466.

Find that irradiated farina, as purchased in the open market and incorporated in a rachitic diet as 10%, does not cure rickets in rats.

Sherman, H. & Stiebeling, H. 1929

Quantitative Studies of Responses to Different Intakes of Vitamin D.

Jour. Biol. Chem., 83, p. 497.

Report the results of large numbers of experiments which afford extensive evidence in confirmation of the fact that ordinary cow's milk contains important amounts of vitamin D.

Smith, L. 1929

Viosterol in Radiation Sickness.

Jour. Amer. Med. Assoc., 93, p. 2000.

Marked relief of all aymptoms of radiation sickness is usually effected in early stages of the disease by means of viosterol.

Steenboch, H. & Co-Workers. 1929

Cereals and Rickets.

Jour. Amer. Med. Assoc., 93, p. 1868.

By feeding commercially irradiated rolled oats, rickets was prevented in dogs and rats and no interference in growth or reproduction was shown.

Watsom, C. 1929

Irradiated Milk vs. Cod Liver Oil for Rickets.

Lancet, 107, p. 1220.

Discusses the value of irradiated milk over cod liver oil as a cure for rickets in infants.

Wieland, E. 1929

Modern Therapy of Rickets with Irradiated Milk or Ergosterol Preparations.

Jour. Amer. Med. Assoc., 93, p. 1264.

Stresses the fact that vitamin D therapy should be employ-

ed only in disturbances caused by vitamin D avitaminosis since careless use may cause harm.

Wilder, R. 1929

Hyperparathyroidism.

Jour. Amer. Med. Assoc., 93, p. 62.

Describes an operation on a person to remove small nodular mass in the parathyroid after which there was a great loss of vitamin D.

Zallocco, A. 1929

Treatment of Rickets with Viosterol.

Jour. Amer. Med. Assoc., 93, p. 1688.

Concludes that viosterol is of great value in the treatment of rickets and that it should be preferred to irradiated foods.

Anon. 1930

Accepted and Nonaccepted Viosterol Preparations.

Jour. Amer. Med. Assoc., 94, p. 1923.

Calls attention to the importance to the physician and to the patient that the viosterol prescribed be one accepted by the Council on Pharmacy and Chemistry.

Anon. 1930

Activity of Vitamin D.

Lancet, 108, p. 588.

Shows the need for a new vitamin D standard due to the wide variance in vitamin D content of different cod liver oils.

Anon. 1930

Hypervitaminosis with Vitamin D.

Jour. Amer. Med. Assoc., 95, p. 1023.

Admit the danger of moderate doses of viosterol to be less dangerous than first supposed; but stresses the fact that the action of vitamin D is far from being solved.

Anon. 1930

Renal Rickets--An Undesirable Designation?

Jour. Amer. Med. Assoc., 95, p. 116.

Holds that the term "renal rickets" be replaced by a more comprehensive term, notably renal infantilism. It would avoid confusion with "rickets" as it is commonly known.

Anon. 1930

Rickets and Vitamin D.

Jour. Amer. Med. Assoc., 95, p. 38.

Experimental work done would seem to indicate that local disturbances in the epiphyses of the bone as well as blood disturbances play a role in the causation of rickets.

Anon. 1930

The Action of Vitamin D.

Jour. Amer. Med. Assoc., 94, p. 1505.

Discusses the mode of action of vitamin D in the body. States that vitamin D controls the intermediary metabolism of calcium and phosphorus.

Anon. 1930

Vitamin A in Disease.

Jour. Amer. Med. Assoc., 95, p. 798.

Points out the greater value of viosterol over cod liver oil in the treatment of rickets with the exception of certain cases where just the opposite is true.

Anon. 1930

Vitamin D and the Parathyroids.

Jour. Amer. Med. Assoc., 94, p. 1148.

Suggest that occasional failure of efficacious antirachitic agents may be attributed to a glandular deficiency not apparent at the time.

Barnes, D., Brady, M. & James, E. 1930

Comparative Value of Viosterol and Cod Liver Oil as Prophylactic Antirachitic Agents.

Jour. Amer. Med. Assoc., 94, p. 511.

Compare viosterol and cod liver oil as to their effectiveness in rickets. State that there is evidence of greater need for protection against rickets among colored infants.

Bilk, C. & Wirick, A. 1930

Long Time Feeding Experiments with Activated Ergosterol.

Jour. Biol. Chem., 86, p. 117.

No significant quantity of activated ergosterol was received by rats "in utero". Nursing rats received in their milk a small amount of vitamin D when the mothers were given enormous overdoses.

Bilk, C. & Co-Workers. 1930

The Isoergosterols and Vitamin D.

Jour. Biol. Chem., 87, p. 531.

Explain how vitamin D may be regarded as isomeric with ergosterol.

Brown, H. & Shohl, A. 1930

Rickets in Rats.

Jour. Biol. Chem., 86, p. 245.

Find that the amount of calcium and phosphorus in the diet determines the retention of tese elements. Vitamin D controls their intermediary metabolism.

Brougher, J. 1930

Effect of Vitamin D on Blood Coagulaion Time.

Jour. Amer. Med. Assoc., 94, p. 666.

Finds that when the blood coagulation time is abnormally long, viosterol or cod liver oil given orally restores it to normal within 4 hours. Thus is of use in syphilis, acute infections and jaundice.

Broughter, J. 1930

Viosterol (Irradiated Ergosterol) in Treatment of Parathyroid Tetany.

Jour. Amer. Med. Assoc., 94, p. 471.

Cites cases involving 5 patients with parathyroid deficiencies all of whom were benefited by viosterol therapy.

Collazo, J., Rubino, P. & Varela, B. 1930

Role of Vitamin D in Bone Regeneration.

Jour. Amer. Med. Assoc., 94, p. 1541.

The administration of vitamin D to rats with fracture hastened callus formation. They recommend the administration of vitamin D in all cases of fracture.

(Committee on Foods.) 1930

Murrets (Irradiated).

Jour. Amer. Med. Assoc., 94, p. 559.

Makes vitamin D available in the form of a breakfast food for all ages except infants.

(Committee on Foods.) 1930

Quaker Farina (Irradiated).

Jour. Amer. Med. Assoc., 94, p. 559.

Verify the vitamin D content of Quaker farina by feeding tests. This is offered simply as another source of vitamin D, which, of all the vitamins, occurs naturally the least.

(Correspondent in Paris.) 1930

Viosterol in Tuberculosis.

Jour. Amer. Med. Assoc., 95, p. 424.

Experiments with rabbits showed increased percentage of calcareous salts in the lung tissue after viosterol was given.

(Correspondent in London.) 1930

Diet and Teeth.

Jour. Amer. Med. Assoc., 94, p. 728.

Discuss the factors which enter into normal calcification of the teeth. Confess that very little is known concerning vitamin D as to its mode of affecting tooth calcification.

(Council on Pharmacy and Chemistry.) 1930

Vigantol Not Acceptable for N. N. R.

Jour. Amer. Med. Assoc., 94, p. 410.

Declare "Vigantol" unacceptable for New and Nonofficial Remedies in keeping with the best interests of the medical profession and of the public.

Cox, W. & Bilk, C. 1930

Antirachetic Substances.

Jour. Biol. Chem., 88, p. 709.

Find a substance in ergosterol differing from ordinary isoergosterols due to the fact that like vitamin D, it does not form a precipitate with digitonin.

De Sanctis, A. & Craig, J. 1930

Comparative Value of Viosterol and Cod Liver Oil as Prophylactic Antirachitic Agents.

Jour. Amer. Med. Assoc., 94, p. 1285.

Conclude that either the present recommended prophylatic dose of viosterol is too small to prevent rickets or the disease is not due to a deficiency of vitamin D alone. They lean toward the second possibility.

Edelstein, E. 1930

Rickets=Treatment with Small Doses of Viosterol.

Jour. Amer. Med. Assoc., 94, p. 901.

Reports good results on 15 children with severe and moderately severe rickets were obtained with daily doses of viosterol of 0.4 to 0.5 mg.

Garrahan, J. & Traverasro, J. 1930

Vitamin D and Craniotabes.

Jour. Amer. Med. Assoc., 94, p. 1102.

In 16 infants with craniotabes the viosterol used was of

such poor grade that no benefical results were obtained. These results emphasize the importance of the problem.

Grant, A. 1930

Effect of Rachitic Diets on Experimental Tuberculosis.

Jour. Amer. Med. Assoc., 94, p. 435.

Confirms results previously reported concerning the role that vitamin D plays in increasing resistance to tuberculosis.

Hart, E., Steenbock, H. & Kline, O. 1930

Dietary Factors Influencing Calcium Assimilation.

Jour. Biol. Chem., 86, p. 145.

Describe the influence of irradiated yeast on the calcium and phosphorus metabolism of milking cows as having no positive effect, although the milk became enriched with vitamin D.

Hess, A., Lewis, J. & Rivkin, H. 1930

Newer Aspects of the Therapeutics of Viosterol (Irradiated Ergosterol).

Jour. Amer. Med. Assoc., 94, p. 1885.

Suggest a better method of standardizing viosterol. Instead of using cod liver oil units its direct potency should be expressed as curative "rat units".

Hess, J., Pancher, H., Maurice, L. & Klein, R. 1930

Viosterol.

Jour. Amer. Med. Assoc., 95, p. 316. (Yrbk. A. Ph. A., 19, p. 135.)

Review experimental data on feeding optimim amounts of vitamin D alone as against A and D in cod liver oil.

Hess, J., Pancher, H. & Dale, M. 1930

Viosterol (Irradiated Ergosterol).

Jour. Amer. Med. Assoc., 95, p. 316.

Describe experiments to determine the prophylactic dose, the optimum dose for therapeutic purposes and the effect of massive doses of viosterol.

Hepner, F. 1930

Modes of Elimination of Excess Vitamin D.

Jour. Amer. Med. Assoc., 94, p. 69.

Finds that most of the excess vitamin D is elimiated in the bile. During lactation some was excreted in the milk but none in the urine.

Hildebrand, G. 1930

Irradiated Cod Liver Oil and Eosin in Pulmonary Tuberculosis.

Jour. Amer. Med. Assoc., 95, p. 622.

Describes a case where irradiated cod liver oil takes together with eosin proved benefical in a case fo acute tuberculosis.

Hoyle, J. 1930

Toxic Effects of Viosterol.

Jour. Amer. Med. Assoc., 94, p. 1442.

Concludes that toxic effects from viosterol in alcoholic solution are produced only in animals taking a synthetic diet.

Jones, J., Rapoport, M. & Hodes, H. 1930

The Effect of Irradiated Ergosterol on Thyroparathyroidectomized Dogs.

Jour. Biol. Chem., 86, p. 267.

From the experiments dexcribed it would seem highly probable that the antirachitic factor does not act by simply stimulating the parathyroid glands to greater activity.

Jones, J., Rapoport, M. & Hodes, H. 1930

The Source of Excess Calcium in Hypercalcemia.

Jour. Biol. Chem., 89, p. 647. (Yrbk. A. Ph. A., 19, p. 97.)

Gives experimental data regarding source of calcium in connection with irradiated ergosterol.

Kaminsky, J. & Davidson, D. 1930

Effect of Oral Administration of Viosterol in Pulmonary Tuberculosis.

Jour. Amer. Med. Assoc., 95, p. 622.

Results show that the administration of viosterol is followed by an increased serum-calcium concentration.

Kleinschmidt, H. & Schadow, H. 1930

Treatment of Rickets with Viosterol.

Jour. Amer. Med. Assoc., 94, p. 1360.

Review the results of the last 2½ years of using viosterol in the treatment of rickets. Also discuss dosage and injury from overdosage.

Koch, F., Koch, E. & Ragins, I. 1930

Fractionation Studies on Provitamin D.

Jour. Biol. Chem., 85, p. 141.

Conclude that the best conditions for increasing activatability by the heat treatment are heating with no oxygen present at temperatures slightly above the melting point for periods of 1 to 2 hours.

Kon, S. & Mayzner, M. 1930

Antirachitic Value of Irradiated Yeast.

Lancet, 1930, v. 2, p. 794. (Yrbk. A. Ph. A., 19, p. 124; Analyst, 55, p. 400.)

Gives results of tests on irradiated baker's yeast for rachitic children. Predict that the yeast will play an important role in future dietary.

Lerrsum, E. 1930

(Bestrahlter Lebertran.)

Nederl. Tijdschr. Beneesk., 74, v. 1, p. 899. (Jarhesberich. der Pharmaz., 90, p. 155.)

(Experiments on rats have shown that irradiated cod liver oil has a lower vitamin D potency than the untreated oil.)

Levine, V. & Richman, E. 1930

(Eine Reaktion zur Unterscheidung von Bestrahltem und Nicht Bestrahltem Ergosterin.)

Proceed. Soc. Exp. Biol. Med., 27, p. 1010. (Jahresbericht. der Pharmaz., 91, p. 130; Chem. Centralbl., 1931, v. 1, p. 1489.)

(Describe in detail a chemical proceedure for differentiating between ergosterol and irradiated ergosterol.)

1930

(London Correspondent.)

A Standard for Vitamin D.

Jour. Amer. Med. Assoc., 95, p. 874.

Describes a standard for vitamin D accepted by the National Institute for Medical Research in England and its continued use is recommended.

MacCorquadale, D., Steenboch, H. & Adkins, H. 1930

Antirachitic Activation.

Jour. Am. Chem. Soc., 52, p. 251. (Yrbk., A. Ph. A., 19, p. 119.)

List 5 new compounds prepared, commenting on activability by ultra-violet light.

MacKeith, M. 1930

(Distillation of Vitamin D.)

Proc. Roy. Soc. Brit., 107, p. 76. (Yrbk. A. Ph. A., 20, p. 176; Physiol. Abstr., 16, p. 615.)

(A product of high antirachitic power was obtained but the crystals were considered to be a mixture rather than a pure product.)

Macy, I. & Co-Workers. 1930

Metabolism of Women During the Reproductive Cycle.

Jour. Biol. Chem., 86, p. 59.

Describes the results of experiments on 3 nursing mothers before and after supplementing their customary home diets with cod liver oil and yeast.

(Medical Research Council.)

The Antirachitic Vitamin D.

Lancet, 108, p. 503.

Mention 3 biological methods of estimating the antirachitic effect which the Research Council recommends.

Maisin, J., Mund, W., Pourbair, N. & Castille, A. 1930

(Die Umwandlung von Ergosterin in Vitamin D durch den Einflusz von Radiumenanation.)

Comp. de Soc. Biol., 103, p. 534. (Jahresberich. der Pharmaz., 190, p. 286; Chem. Centralbl. 1930, v. 1, 2755.)

(Compares the vitamin D strength of irradiated ergosterol in relation to its healing effect on rachitic rats.)

Moore, C. & Co-Workers. 1930

Antirachitic Action of Viosterol.

Jour. Amer. Med. Assoc., 94, p. 665.

A report on 113 patients who were given varying doses of viosterol over a period of several months. From the results obtained, the best dosages are listed for various ages and physical conditions.

Morgan, A. & Garrison, E. 1930

Response to Parathyroid Extract.

Jour. Biol. Chem., 85, p. 687.

Dogs given viosterol or cod liver oil with parathyroid extract injection show abnormally large increases in serum calcium and inorganic phosphate.

(National Institute for Medical Research.)

A Standard for the Antirachitic Vitamin D.

Phar. Jour., 125, p. 222. (Yrbk. A. Ph. A., 19, p. 103.)

Gives a standard for vitamin D as established by that organization.

Norris, E. & Church, A. 1930

The Toxic Effect of Fish Liver Oils.

Jour. Biol. Chem., 89, p. 437.

Conclude among other things that the toxic effect of large doses of cod liver oil is not due to hypervitaminosis but as a result of the excess of vitamins A and D.

Plimmer, R. & Plimmer, V. 1930

Bladder Stone and the Lack of Vitamin D.

Jour. Amer. Med. Assoc., 94, p. 1471.

Prevalence of bladder stones in humans on diets deficient in vitamin D indicates that, as in rats, it is a shortage of this vitamin that is to blame.

Remy, E. 1930

Der Chemische Nachweis der Vitamine und ahe Frage der Existenz des Spezifischen Wachstumsvitamins.

Archiv. Pharm., 268, p. 299. (Jahresberich. der Pharmaz., 90, p. 282; Chem. Centralbl., 1930, v. 1, p. 1639.)

A short review of the isolation and properities of vitamins A, B, C, D and E.

Schippers, J. 1930

Treatment of Rickets with Viosterol.

Jour. Amer. Med. Assoc., 94, p. 832.

Maintains that viosterol should be given only on the basis of definite indications, namely when cod liver oil can not be given for some reason or other.

Schultz, O. 1930

Über die antirachitische Vitamineinheit.

Zeits. Vitamin-Kunde, 51, p. 81. (Jahresberich. der Pharmaz., 90, p. 286; Chem. Centralbl. 1930, v. 2, p. 2799.)

A new method for standardizing vitamin D containing preparations is described in detail.

Sherman, H. & Stiebeling, H. 1930

Quantitative Differentiation of Vitamins A and D.

Jour. Biol. Chem., 88, p. 683. (Jahresberich. der Pharmaz., 90, p. 284; Chem. Centralbl., 1931, v. 1, p. 960.)

Discusses the quantitative determination of vitamin D using rats.

Shohl, A., Goldblatt, H. & Brown, H. 1930

Pathologic Effects on Rats of Excess Viosterol.

Jour. Amer. Med. Assoc., 95, p. 449.

Results of work indicate that rickets may be healed by a rearrangement and not a retention of calcium and phosphorus in the bones.

Spies, T. 1930

Calcification of Tubercles by Means of Viosterol.

Jour. Amer. Med. Assoc., 95, p. 157.

Demonstrates that market calcification of the tubercles of the lung takes place after administration of large doses of viosterol in acute tuberculosis.

Spies, T. & Glover, E. 1930

Renal Lesions Produced by Massive Doses of Viosterol.

Jour. Amer. Med., Assoc., 95, p. 690.

Kidney damage was caused in rabbits by the administration of large doses of viosterol. Describe in detail the harm done.

Steenboch, H. & Co-Workers. 1930

Fat-Soluble Vitamins.

Jour. Biol. Chem., 87, p. 103.

Give results obtained in the modification of the antirachitic value of cos's milk by exposure of the cow to sunlight and artifical irradiation.

Steenboch, H. & Co-Workers. 1930

Fat-Soluble Vitamins.

Jour. Biol. Chem., 87, p. 127.

Believe that the excretory elimination of calcium may be controlled neurologically as well as by the antirachitic factor as a result of tests performed on goats.

Stone, W. 1930

Dietary Facts, Fads and Fancies.

Jour. Amer. Med. Assoc., 95, p. 713.

Stresses the importance of vitamin D in rickets and dental caries and lists several natural sources.

VanLeersum, E. 1930

Cod Liver Oil with Phosphorus for Treatment of Tuberculosis.

Jour. Amer. Med. Assoc., 95, p. 829.

Experiments on rats revealed that phosphorus reduced by

half the vitamin D content of cod liver oil. Hence the phosphorus and vitamin D should be administered separately.

Wilson, D. & Surie, E. 1930

Dietary Factors in Etiology of Osteomalacia.

Jour. Amer. Med. Assoc., 94, p. 1355.

Investigation of 265 cases of late rickets showed sonsistent lack of vitamin D as the predominant factor. Value of sunlight as a move to overcome this is discussed.

Wokes, F. 1930

Vitamins in Relation to Pharmacy.

Pharmac. Jour., 125, p. 478. (Jahresberich. der Pharmaz., 90, p. 282; Chem. Centralbl., 1931, v. 1, p. 1309.)

Deals with vitamin A and D. Discusses especially the standardization of the latter.

Anderson, J. 1931

U. S. P. Biological Assay of Cod Liver Oil Present and Future.

Jour. Am. Pharm. Assoc., 20, p. 117. (Jahresberich. der Pharmaz., 91, p. 261; Chem. Centralbl., 1931, v. 2, p.883.)

Tells of the introduction of a vitamin D standard for cod liver oil in the U. S. P. where formerly there was only a vitamin A standard.

Angus, T. 1931

Isolation of Vitamin D.

Proc. Roy. Soc.,London, 108, p. 340. (Yrbk. A. Ph. A., 20, p. 505; Squibb Abstr. Bull., 5, p. 56.)

Various tests on calciferol are given. Its potency as compared to a standardized preparations of irradiated ergosterol is given as being twice as great.

Anon. 1931

The Distribution of Ergosterol in the Body.

Jour. Amer. Med. Assoc., 96, p. 275.

Experiments on rabbits revealed ergosterol to be present in the brain, adrenals and liver with accasional traces in the kidneys.

Askew, F. 1931

Crystalline Vitamin D.

Proc. Roy. Soc., London, 109, p. 488; (Yrbk. A. Ph. A., 21, p. 504; Quart. Jour. Pharm. & Pharmacol., 5, p. 701.)

Gives properties of calciferol and discusses its companion derivatives from irradiated ergosterol.

Askew, F. 1931

Crystalline Vitamin D.

Nature, 128, p. 758. (Yrbk. A. Ph. A., 20, p. 174; Jour. Pharm. & Pharmacol., 4, p. 626.)

Gives the various physical and chemical properties of calciferol with other data as to its recovery from irradiated ergosterol.

Bauer, W. & Co-Workers. 1931

Effect of Viosterol on Gastric and Pancreatic Juices.

Jour. Amer. Med. Assoc., 96, p. 1727.

The administration of viosterol to 4 persons produced a reduction in the free hydrochloric acid secretion in 3 cases. Pancreatic activity was also affected.

Bilk, C. & Co-Workers. 1931

A Critique of the Line Test for Vitamin D.

Jour. Biol. Chem., 90, p. 619.

Present a critical study of the line test with special reference to technique, dosage, time-healing relation and the factors influencing calcification.

Callow, R. & Fishmann, C. 1931

The Occurrence of Vitamin D in Lampreys.

Biochem. Jour., 25, p. 1464.

Report finding moderate amount of vitamin D in lampern (petromyzon fluviatilis) oil.

(Correspondent in Belgium.) 1931

Vitamins and Irradiated Foods.

Jour. Amer. Med. Assoc., 96, p. 1327.

A frief general discussion of vitamin D and irradiated foods. Mentions conditions where it is to be recommended and gives various sources of occurence.

(Council on Pharmacy & Chemistry.) 1931

Acceptance of Viosterol Preparations.

Jour. Amer. Med. Assoc., 96, p. 1307.

Agree that properly standarized viosterol preparations may be accepted regardless of the technique of preparation.

Cruz-Coke, E. 1931

(Über eine Chemische Reacktion des Antirachitischen Vitamins.)

Comp. de Soc. Biol., 105, p. 238. Chem. Centralbl., 1, p. 2497; Jahresberich. der Pharmaz., 91, p. 260.)

(Gives data regarding a color reaction of ergosterol and irradiated ergosterol.)

Duguid, J. 1931

Toxicity of Vitamin D.

Lancet, 219, p. 983. (Yrbk. A. Ph. A., 20, p. 112; Analyst, 56, p. 266.)

Expresses need for the official standardization of all viatmin D preparations on the market with information as regards proper dosage.

Dyer, F. 1931

The Standardization of Vitamin D by the Line Test.

Quart. Jour. Pharm. & Pharmacol., 4, p. 503. (Yrbk. A. Ph. A., 20, p. 112; Jahresbericht. der Pharmaz., 92, p. 281.)

Shows several graphs to be used as aids in determining the vitamin D potency of substances.

Everse, J. & Van Nierkerk, J. 1931

(Assay of Irradiated Ergosterol.)

Ned. Tijdschr. Geneesk., 75, p. 1101. (Yrbk. A. Ph. A., 20, p. 364; Squibb Abstr. Bull., 5, p. 34.)

(Describes a biological method of assay of irradiated ergosterol the x-ray photographys of the bones of rats.)

Flinn, F. 1931

Elimination of Radium Salts from the Human Body.

Jour. Amer. Med. Assoc., 96, p. 1763.

Gives detailed information concerning the administration of viosterol in cases of radium poisoning.

Gjorup, E. 1931

Viosterol in Rickets and Tetany.

Jour. Amer. Med. Assoc., 96, p. 2006.

Report 22 cases of children with rickets or tetany all responded favorably to viosterol therapy. Normal condtion being attained in most cases in 2 weeks.

Hansman, F. 1931

Vitamin D in Parathyroid Deficiency Following Thyroidectomy.

Jour. Amer. Med. Assoc., 96, p. 563.

Lest symptoms occuring from parathyroid inbalance. States that these symptoms disappear on the administration of large doses of viosterol, 6 cases being recorded.

Harris, L. & Innes, J. 1931

The Mode of Action of Vitamin D.

Biochem. Jour., 25, p. 367.

A detailed discussion of vitamin D and its calcification action in the body.

Hess, A. 1931

Action of Irradiated Ergosterol and Irradiated Foods.

Jour. Amer. Med. Assoc., 96, p. 1988.

Describes viosterol as a stabilizer of calcium and phos-

phorus in the body. Stresses its value as in activated milk for protection against rickets.

Hoff, H. 1931

Resistance Against Poisoning with Metallic Salts Increased by Vitamin D.

Jour. Amer. Med. Assoc., 96. p53.

Lists factors that cause vitamin D to be of help in metallic poisoning. Also mentions vitamin D poisoning and its effect on the cell.

Hoyle, J. 1931

Toxic Effects of Viosterol.

Jour. Amer. Med. Assoc., 96, p. 72.

Offers an explanation as to the cause of the toxic action of irradiated ergosterol in alcoholic solution.

Jacques, L. 1931

Treatment of Postoperative Tetany by Viosterol.

Jour. Amer. Med. Assoc., 96, p. 471.

Reports on 6 cases of human postoperative tetany treated with viosterol. Feels that vitamin D action does not occur through the agency of the parathyroid bodies.

St. Julian, R. & Heller, V. 1931

Vitamin Deficiency Effects.

Jour. Biol. Chem., 99, p. 90.

Find the coefficients of digestibility for protein, fat, and carbohydrate to be independant of the vitamin D intake by the body.

Kramer, B., Shear, M. & Siegel, J. 1931

Composition of Bone.

Jour. Biol. Chem., 91, p. 723.

Gives results of experimenting with viosterol to determine the amount necessary to raise the Ca X P product above the rachitic level.

Krauss, W. & Bethke, R. 1931

The Effect on the Vitamin D Content of Milk of Feeding Irradiated Ergosterol to Cows.

Jour. Biol. Chem., 92, p. 10.

Show that the vitamin D content of butter fat increases as the number of vitamin D units fed increased.

(London Correspondent.) 1931

Diet and Teeth.

Jour. Amer. Med. Assoc., 96, p. 1324.

Describes experiments where vitamin D proved beneficial in caries and general calcification of the teeth using rats, rabbits and dogs.

May, E. 1931

The Prevention of Rickets in Premature Infants by the Use of Viosterol 100 D.

Jour. Amer. Med. Assoc., 96, p. 1376.

Shows that effective doses of vitamin D can be given to premature infants without upsetting digestion, thus preventing rickets.

Mc Farlane, W., Graham, W. & Richardson, F. 1931

The Fat-Soluble Vitamin Requirements of the Chick.

Biochem. Jour., 25, p. 358.

Compare fish meal with meat meal as to the vitamin D content.

McGowan, J., Cunningham, I. & Anchinachie, D. 1931

On the Fundamental Nature of Vitamin D Action.

Biochem. Jour., 25, p. 1295.

Present evidence regarding the mode of action of vitamin D in the cure and prevention of rickets.

Moore, R. & DeVries, T. 1931

The Activation of Ergosterol with Radium Emanation.

Jour. Am. Chem. Soc., 53, p. 2676. (Yrbk. A. Ph. A., 20, p. 147.)

Give evidence showing that ergosterol can be activated with radium emanation to 0.010, that of good ultra-violet irradiated ergosterol.

Prather, E., Nelson, M. & Bliss, A. Jr. 1931

Some Observations on Viosterol and Cod Liver Oil.

Jour. Am. Pharm. Assoc., 20, p. 1291. (Yrbk. A. Ph. A., 20, p. 135; Jahresbericht. der Pharmaz., 92, p. 137.)

Give experimental data indicating that the substitution of irradiated ergosterol for cod liver oil in the diet of a child is not logical.

Reerink, E. & VanWijk, A. 1931

The Vitamin D Problem.

Biochem. Jour., 25, p. 1001.

Describe experiments where various vitamin D products are measured for their vitamin D content.

Rohmer, P. 1931

Inbluence of vitamin A on Action of Viosterol in Rickets.

Jour. Amer. Med. Assoc., 96, p. 305.

Describe experiments on 6 rachitic children given vitamin A along with viosterol. The addition of large doses of vitamin A did not modify the action of the viosterol.

Roi, G. 1931

Mineral Exchange During Pregnancy.

Jour. Amer. Med. Assoc., 96, p. 1739.

Describe beneficial effects of administering vitamin D with colloidal calcium as to general metabolism and reestablishing normal equilibrium in the pregnant woman.

Schieblich, M. 1931

Zur Wertbestimmung von Vitamin D=Präparaten.

Bio. Zeit., 230, p. 312. (Jahresberich. der Pharmaz., 91, p. 261; Chem. Centralbl., 1931, v. 1, p. 2498.)

Deals with a procedure for determing the effect of vitamin D preparations in healing control rats of rickets, with reference to different sized doses.

Schittenhelm, A. & Eisler, B. 1931

Über das Antirachitische Vitamin der Wurzelkeime.

Zeitschrift Exper. Med., 75, p. 745. (Jahresberich. der Pharmaz., 91. p. 262; Ph. Zeit., 76, p. 607.)

Describe a substance of antirachitic properties in yeast and compares it with that found in irradiated ergosterol.

Schultzer, P. 1931

Investigations on the Determination of Vitamin D.

Biochem. Jour., 25, p. 1745.

Draws a comparison between the preventive and the curative methods of employing vitamin D.

Schultzer, P. 1931

(Vitamins A and D-Quantitative Determination of.)

Dansk. Tids. Farm., 5, p. 177. (Yrbk. A. Ph. A., 20, p. 113.)

(Reviews methods of bioassay of vitamins A and D in use in 1931 at the Danish State Vitamin Laboratory.)

Spies, T. 1931

Calcification of Tubercles by Means of Viosterol.

Jour. Amer. Med. Assoc., 96, p. 1261.

Tells how the repeated administration of large doses of viosterol to rabbits with chronic tuberculosis produces, as in acute tuberculosis, calcification within the tubercle.

TuTunji, D. 1931

The Toxicity of vitamin D.

Lancet, 109, p. 53.

Describe a case where an overdose of vigantol was administered to a rachitic 2 year old boy.

Taylor, N. 1931

Dosage of Viosterol.

Jour. Amer. Med. Assoc., 96, p. 60.

Discuss the overdosage of viosterol and its mode of action in the body. Concludes that the presence of intact parathyroid tissue is requisite for the production of hypercalcemia by viosterol.

Tisdall, F., Drake, T. & Brown, A. 1931

Vitamins in Bread.

Jour. Amer. Med. Assoc., 96, p. 1436.

State the vitamin D incorporated in bread does not change the taste or appearance of the bread. Endorse this practice as good since vitamin D is found in so few foods.

Anon. 1932

Calcium and Hypercalcemia.

Jour. Amer. Med. Assoc., 98, p. 740.

Discuss hypercalcemia and the means of overcoming it when due to overdosage with viosterol. Factors helping to cause hypercalcemia are reviewed.

Anon. 1932

Calcium and Viosterol in Pregnancy.

Jour. Amer. Med. Assoc., 98, p. 1494.

Formulates a series of questions and answers concerning the administration of viosterol and calcium to a pregnant woman.

Anon. 1932

Hypervitaminosis D and Arteriosclerosis.

Jour. Amer. Med. Assoc., 98, p. 1748.

Cause arteriosclerosis by enormous overdoses of viosterol. Expresses great interest as to whether the newly crystalized vitamin D will produce these toxic effects.

Anon. 1932

(Standardisierte Vitamine.)

Südd. Ap. Zeitz., 72, p. 652. (Jahresbericht, der Pharmaz., 92, p. 276.)

(Discusses the international standards for the various vitamins. 1 mg. of an irradiated solution of ergosterol is used in the case of vitamin D.)

Bauer, W. & Marble, A. 1932

Irradiated Ergosterol.

Jour. Amer. Med. Assoc., 98, p. 922.

Find that the dose of viosterol necessary to produce a change in the calcium and phosphorus metabolism is much smaller for individuals with calcium deficiency diseases than for normal individuals.

Bauer, W., Marble, A. & Claflin, D. 1932

Irradiated Ergosterol.

Jour. Amer. Med. Assoc., 98, p. 927.

Report noticing an increase of bone trabeculae when calcium was administered to cats with calcium phosphate deficiency. Viosterol added made this increase still greater.

Bourdillon, R., Bruce, H. & Webster, T. 1932

Determination of Vitamin D.

Biochem. Jour., 26, 522. (Yrbk. A. Ph. A., 21, p. 505; Physiol. Abstr., 17, p. 421.)

Discuss various ways that cause vitamin D to deteriorate and data on the degree of deterioration.

Bischoff, G. & Loeschke, A. 1932

Action of Toxic Component of Viosterol (Calcinosis Factor) on Bone Phosphatase.

Jour. Amer. Med. Assoc., 98, p. 1953.

Find greater tolerance of calcinosis factor by rachitic dogs than by normal dogs. Discuss this with regard to bone calcification.

(Correspondent in London.) 1932

Crystalline Vitamin D.

Jour. Amer. Med. Assoc., 98, p. 828.

Describe a further purified crystalline vitamin D over the one known before as "calciferol". The process of obtaining it is briefly discussed.

(Correspondent in London.) 1932

The Teeth and Vitamin D.

Jour. Amer. Med. Assoc., 98, p. 1313.

Discusses vitamin D generally and as to its importance and work that is being done relative to its role in calcification of teeth.

(Correspondent in London.) 1932

Vitamin D and the Teeth.

Jour. Amer. Med. Assoc., 98, p. 1923.

D Describe experiments where large groups of children were given vitamin D with the result of much better tooth formation.

Coward, K. 1932

The Relative Vitamin A and D Content of Different Samples of Cod Liver Oil.

Pharm. Jour., 129, p. 4. (Yrbk. A. Ph. A., 21, p. 453.)

Hold that quantitative estimations of vitamins A and D in cod liver oil are made more accurately than 5 years previous and that some of the older teachings no longer hold.

Coward, K. 1932

The Relative Vitamin A and D Content of Different Samples of Cod Liver Oil.

Pharm. Jour., 129, p. 75. (Jahresbericht. des Pharmaz., 92, p. 279; Chem. Centralbl. 1932, v. 2, p. 1650.)

A report of the relative vitamin A and D content of 44 samples of cod liver oil.

Coward, K., Dyer, F. & Morgan, B. 1932

The Relative Vitamin A and Vitamin D Content of Samples of Cod Liver Oil.

Analyst, 57, p. 368. (Yrbk. A. Ph. A., 21, p. 452.)

Disclose that the "blue color value" is no indication of the vitamin D potency of the oil.

Coward, K. 1932

The Quantitative Determination of Vitamin D by Means of its Growth-Promoting Property.

Biochem. Jour., 26, p. 1585. (Yrbk. A. Ph. A., 21, p. 371; Pharm. Jour., 129, p. 499.)

Describes tests on rats with vitamin D. The increase in weight of the animal is used as the basis of determining the effect.

Durguid, J., Duggan, M. & Gough, J. 1932

Toxicity of Viosterol.

Jour. Amer. Med. Assoc., p. 2025.

Find that viosterol is more toxic to rats fed on vitamin-free diets of high calcium content. Hence these 2 agents are considered as possible causes of toxicity.

Emmett, A. 1932

The Study of Halibut Liver.

Yrbk. A. Ph. A., 20, p. 455. (Jour. Ind. Eng. Chem., 24, p. 1073.)

Find halibut liver oil to be the richest known source (natural) of vitamins A and D. When tested on rats no undesirable effects were noted.

Ewe, G. 1932

The Vitamin Potency of Certain Lofoten (Norwegian) Cod Liver Oils.

Jour. Am. Phar. Assoc., 21, p. 1145. (Yrbk. A. Ph. A., 21, p. 360.)

Give information regarding geographical sources as an index for vitamin potency of cod liver oils. Results of tests of 23 oils are given.

Hess, A., Benjamin, H. & Gross, J. 1932

Excess Calcium in Hypercalcemia.

Jour. Amer. Med. Assoc., 98, p. 350

Reduce hypercalcemia in dogs by the intravenous injections of a solution of sodium bicarbonate, which caused excess calcium and phosphorus in the lungs and kidneys.

Holmes, A. 1932

Vitamin A and D assay for Cod Liver Oil and Related Products.

Jour. A. Ph. A., 21, p. 597.

Gives a method of assay of Vitamin D. Rats subjected to a rachitogenic diet are used and fed the vitamin D diet for 10 days after which they are killed and examined for recalcification on the leg bones.

Holmes, A. & Tripp, F. 1932

Factors Which Influence the Effectiveness of a Rachitogenic Ration.

Jour. Biol. Chem., 97, p. 9.

Discuss the vitamin D content of several foods fed to rats to cause experimental rickets; and how this factor may affect the development of the disease.

Jampolis, M. & Lunde, S. 1932

The Need of Larger Doses of Viosterol in Severe Rickets.

Jour. Am. Med. Assoc., 98, p. 1637. (Yrbk. A. Ph. A., 21, p. 432.)

Describe experiments on 2 rachitic children with viosterol using different doses for each child and comparing the results observed.

Jones, W. & Christiansen, W. 1932

The Vitamin Potency of Various Grades of Cod Liver Oil.

Jour. A. Ph. A., 21, p. 145.

List 5 grades of cod liver oil with information regarding how they are obtained and characteristic properties of each. Also list factors affecting vitamin D potency in the oil.

Jones, W. & Christiansen, W. 1932

Über den Vitamingehalt Verschiedener Handelsqualitäten Lebertran.

Phar. Zeitung., 77, p. 546. (Jahresbericht, der Pharmaz., 92, p. 279.)

Reveal factors which are harmful to vitamins A and D in cod liver oil.

Key, K. & Morgan, B. 1932

Determination of Vitamin D.

Biochem. Jour., 26, p. 196. (Yrbk. A. Ph. A., 21, p. 372; Physiol. Abstr., 17, p. 270.)

Describe experiments on rachitic rats with varying doses of vitamin D and record the degree of healing.

King, E. & Hall, G. 1932

Hypervitaminosis.

Jour. Amer. Med. Assoc., 98, p. 77.

Giving massive doses of viosterol to chickens produced a condition of anorexia, loss of weight, extreme emaciation and finally death.

Kletzien, S. & Co-Workers. 1932

Vitamin D and the Conservation of Calcium in the Adult.

Jour. Biol. Chem., 97, p. 265.

Gives information regarding the calcium level in rats during pregnancy and lactation and the effect of vitamin D on these conditions.

(League of Nations Health Organization.) 1932

(Vitamin Standards, International).

Conference on Vitamin Standards., Report No. C. H. 1056 (1) Annex iv. C. H., p. 1055. (Yrbk. A. Ph. A., 21, p. 372; Quart. Jour. Pharm. and Pharmacol., 5, p. 623.)

(Give the standard of vitamin D as the activity of 1 mg. of international standard solution of irradiated ergosterol on rachitic rats.)

Mackay, H. & Rose, S. 1932

Vitamin D Deficiency, Dental Caries and Tonsillar Enlargement.

Jour. Amer. Med. Assoc., 98, p. 587.

Give results of an investigation involving 46 children known to have had rickets in infancy and 40 control children. Conclude that caries is not entirely due to lack of vitamin D.

Morgan, R. 1932

The Determination of Vitamin D in the Line Test by Measurement.

Bioch. Jour., 26, p. 1144. (Jahresbericht. der Pharmaz., 92, p. 281; Chem. Centralbl., 1932, v. 1, p. 253.)

Discuss experiments performed on rats to determine the amount of healing produced by various doses of vitamin D.

Nelson, E. & Walker, R. 1932

Vitamin Content of Medicinal Cod Liver Oils and Related Products.

Jour. Am. Med. Assoc., 98, p. 1263. (Yrbk. A. Ph. A., 21, p. 453.)

Give the potencies of various preparations on the market containing vitamins A and D and their comparative stabilities.

(National Institute for Medical Research.) 1932

Quantitative Methods in Vitamin Assays.

Nature, 129, p. 514. (Jahresbericht. der Pharmaz., 92, p. 278; Chem. Centralbl., 1932, v. 2, p. 892.)

A method for the quantitative determination of vitamin D on rats is given.

Remesaw, I. 1932

Zur Chemischen Natur des Vitamins D.

Biochem. Zeit., 25, p. 560. (Yrbk. A. Ph. A., 22, p.241; Physiol. Abstra., 18, p. 192.)

Advance the view that vitamin D is identical with the keto form of cholesterol.

Rojahn, C. & Wirth, E. 1932

Vitamin A, C, and D.

Apoth. Ztg., 47, p. 838 & 855. (Yrbk. A. Ph. A., 21, p. 371.)

Describe method for testing fresh plant juices for their content of vitamins A, C, and D.

Schübel, K. & Gehlen, W. 1932

Über Quantitative Untersuchungen über die Bildung von Vitamin D.

A. Pat. Pharm., 166, p. 348. (Ph. Zeit., 77, p. 1051; Jahresbericht. der Pharmaz., 92, p. 281.)

Deals with research done on the formation of vitamin D in irradiated brewer's yeast.

Steenbock, H. & Co-Workers. 1932

Irradiated Ergosterol and the Chicken.

Jour. Biol. Chem., 97, p. 249.

Contrast irradiated ergosterol and irradiated yeast with natural vitamin D of fish liver oils as to their action on the chicken.

Strauss, K. 1932

Actions of Viosterol.

Jour. Amer. Med. Assoc., 98, p. 2257.

Discusses a possible mode of action of vitamin D in rachitic children. Offers 3 possible explanations.

Supplee, G. & Hanford, Z. 1932

Irradiated Milk: The Amount of Vitamin D and its Rate of Formation.

Jour. Biol. Chem., 95, p. 687.

It is possible to reach a certain maximum concentration of vitamin D in irradiated milk, over which additional energy does not increase the vitamin D content proportionately.

Vanderveer, H. 1932

Hypervitaminosis.

Jour. Amer. Med. Assoc., 98, p. 848.

Describes experiments from which he concludes that arteriosclerosis produced in rabbits by hypervitaminosis D is not specific. Lists other tissue degenerations.

Wamoacher, L. & Schmueden, A. 1932

Zur Prüfungsmethodik der Antirachitischen Wirksamkeit von Sogenannten Nährpräparaten.

Münch. Med. Wochschr., 79, p. 51. (Yrbk. A. Ph. A., 21, p. 371; Squibb Abstr. Bull., 5, p. 223.)

Descuss methods by which experimentation with rats may be conducted so that a true comparsion can be made with children.

Windaus, A. & Lüttringhaus, A. 1932

Über das Bestrahlte Ergosterin.

Deutc. Med. Woch., 58, p. 1669. (Jahresbericht. der Pharmaz., 92, p. 137; Aporth. Zeitz., 47, p. 1464.)

Trace the formation of the antirachitic principle, vitamin D, through varous stages when ergosterol is irradiated.

Anon. 1933

Crystalline Vitamin D.

Jour. Amer. Med. Assoc., 100, p. 426.

Speculates as to whether the naturally occurring vitamin D is actually identical with the chemically produced compound.

Anon. 1933

Irradiated Ergosterol, Vitamin D and Toxisterol.

Jour. Amer. Med. Assoc., 101, p. 1564.

Points out the advisability of making therapeutic preparations from the crystalline vitamin D rather than from viosterol in order to excape the action of toxisterol.

Anon. 1933

Lusury Bread with Sunshine Vitamin D.

Jour. Amer. Med. Assoc., 100, p. 1935.

Describes a bread enriched with vitamin D as manufactured by the General Baking Company, and stating the exact potency of the vitamin.

Anon. 1933

Vitamin D and Well Being.

Jour. Amer. Med. Assoc., 100, p. 1692.

State that it is unarranted to expect vitamin D given in any amount to be able to compensate fully for an extreme lack of calcium or other dietary essentials.

Bacharach, A. 1933

Photographic Recording of Line Tests for Vitamin D.

Analyst, 5, p. 12. (Yrbk. A. Ph. A., 22, p. 134.)

Discuss procedure for keeping permanent records of vitamin D line tests.

Bacharach, A., Smith, E., & Stevenson, S. 1933

Some Properties of Ergosterol and Calciferol.

Analyst, 58, p. 128. (Yrbk. A. Ph. A., 22, p. 190.)

Give a review of the source, constitution, appearance, stability, optical activity and other features of ergosterol and calciferol.

Barnes, D. 1933

Cod Liver Oil Concentrates.

Am. Jour. Diseases Children, 46, p. 250. (Yrbk. A. Ph. A., 22, p. 146; Squibb Abstr. Bull., 6, p. 1112.)

Tells of the very rapid healing of rickets that resulted when vitamin D concentrate was fed to rachitic infants.

Bernheim, A. 1933

Viosterol in Coryza.

Jour. Amer. Med. Assoc., 100, p. 1058.

Find coryza and cough occuring in individuals 4 or 5 days after taking viosterol and continuing as long as viosterol is taken.

Broom, W. 1933

Commercial Assay of Vitamin D.

Jour. Soc. Chem. Ind., 52, p. 105T. (Yrbk. A. Ph. A., 22, p. 134.)

Describe an assay based on photographs of the forelegs of rachitic rats treated with vitamin D and comparing those of rats fed a standard vitamin D solution.

Bunker, J. & Harris, R. 1933

Antirachitic Potency of Milk of Mothers Fed Vitamin D Milk,

Jour. Amer. Med. Assoc., 100, p. 1967.

Find that by including vitamin D in the diet of the mother during lactation the breast milk can be augmented with antirachitic potency.

Christon, __. & Richez, __. 1933

(Rectal Administration of Cod Liver Oil.)

Bull. Soc. de Therap. __, p. 60. (Yrbk. A. Ph. A., 22, p. 146; Squibb Abstr. Bull., 6, p. 560.)

(Find that vitamin D is able to retain its antirachitic action on the body when introduced rectally as in cod liver oil.)

Coward, K. 1933

The Vitamin D Potency of Sun-Irradiated Dried Yeast.

Lancet, 225, p. 920. (Yrbk. A. Ph. A., 22, p. 241; Analyst, 58, p. 772.)

Conclude that yeast may be activated antirachitically by strong sunlight; with different samples varying in potency.

Decourt, J. & Kaplan, S. 1933

Treatment of Osteomalacia with Viosterol.

Jour. Amer. Med. Assoc., 100, p. 379.

Think that osteomalacia is the result of seversl factors, namely insufficient calcium intake, vitamin deficiency, endocrine disturbances, etc. Describe a method for remedying the unsatisfactory condition.

Grauer, R. 1933

Effect of Viosterol in Experimental Fractures.

Jour. Amer. Med. Assoc., 100, p. 996.

Advances a theory as to the mode of action of viosterol in experimental fractures. The experiments were performed on guinea pigs.

Greaves, J. & Schmidt, C. 1933

The Role Played by Bile in the Absorption of Vitamin D in the Rat.

Jour. Biol. Chem., 102, p. 101.

Advance a hypothesis with reference to the increased need for antirachitic factor in bile fistula animals.

Ham, A. 1933

Hypervitaminosis D.

Jour. Amer. Med. Assoc., 100, p. 613.

Concludes that the tosic effects of vitamin D were shown only after enormous doses, which were infinitely beyond those commonly used, were administered.

Hess, A. 1933

Activated Milk in Antirickets Campaign.

Jour. Amer. Med. Assoc., 100, p. 1137.

Stresses the importance of irradiated milk as a prophylactic against rickets. Assays showed that different activated milks did not differ greatly in vitamin D content.

Josephson, K. 1933

The Story of the Isolation of Crystalline Vitamin D.

Jour. A. Ph. A., 22, p. 309.

Describe the experiments of Windaus (with Hess) in crystalliaing vitamin D after many failures, a crystalline product was obtained and a study of physical properties followed.

Kon, A. & Booth, R. 1933

The Vitamin D Activity of Butter.

Biochem. Jour., 27, p. 1302; (Yrbk. A. Ph. A., 23, p. 221; Analyst, 59, p. 53.)

Cite evidence in favor of a true chemical difference between the anti-rachitic factor of butter and those of cod liver oil and irradiated ergosterol.

Mouriquand, G. & Co-Workers. 1933

Rickets in the Presence of Calcium-Fixing Agents.

Jour. Amer. Med. Assoc., 100, p. 701.

Experiments with 34 children showed direct action of ultra-violet rays to be by far the strongest calcium-fixing agent, viosterol being inferior in this respect.

Rappaport, Z. & Reed, C. 1933

Viosterol of High Potency in Seasonal Hay Fever and Related Conditions.

Jour. Am. Med. Assoc., 101, p. 105. (Yrbk. A. Ph. A., 22, p. 171.)

Results indicate that intravenous injection of viosterol causes considerable improvement in patients suffering from hay fever.

Reed, C. & Co-Workers. 1933

Calcification of Tissues by Toxic Doses of Viosterol.

Jour. Amer. Med. Assoc., 101, p. 1427.

Find the calcium content of tissues increased in dogs after administration of viosterol, although a wide variation of tissues affected was observed.

Sabri, I. & Fikry, M. 1933

Antirachitic Factor in Milk.

Jour. Amer. Med. Assoc., 100, p. 76.

Results agree with those of most other workers that milk, whatever its source, does not contain enough vitamin to be of practical value in the prevention of rickets.

Sheey, E. 1933

Sheey, E.

The Effect of Storage on Vitamin D Potency of Cod Liver Oil.

Scio. Proc. Roy. Dublin Soc., 20, p. 463. (Yrbk. A. Ph. A., 22, p. 194; Jour. Soc. Chem. Ind., 52, p. 974.)

Found that a good quality cod liver oil does not appreciably alter in vitamin D potency when stored for 16 months.

Spies, J. & Lyman, G. 1933

Calcification of Mouse Carcinoma with Viosterol.

Jour. Amer. Med. Assoc., 101, p. 2079.

Demonstrate that abnormal amounts of calcium were deposited in experimental tumors by giving intraperitoneal injections of viosterol to mice with actively growing carcinoma.

Templin, V. & Steenbock, H. 1933

The Effect of Vitamin D on the Teeth of Rats.

Jour. Biol. Chem., 100, p. 217.

Find that the addition of vitamin D results in almost complete protection against mineral losses.

Templin, V. & Steenbock, H. 1933

Vitamin D and the Conservation of Calcium in the Adult.

Jour. Biol. Chem., 100, p. 209.

Describes a long series of experiments on rats showing the value of vitamin D as a food constituent.

Van Harreveld, A. 1933

(The Antirachitic Properties of Some Vitamin D Preparations.)

Arch. Neerland. Physiol., 18, p. 139. (Yrbk. A. Ph. A., 22, p. 134; Physiol. Abstr., 18, 498.)

Attaches no value to the determination of the absolute amount of a substance to cure rickets. Its effect should be compared with that of a standard.

Amcheim, F. 1934

The Absorption of Vitamin D from the Skin.

Jour. Am. Pharm. Assoc., 23, p. 182. (Yrbk. A. Ph. A., 23, p. 156.)

Found that vitamin D can be absorbed from the skin, the vehicle having little or no effect. Rats were used.

Coward, K. & Key, K. 1934

Simplification of Vitamin Tests.

Biochem. Jour., 28, p. 870.

Report progress on giving vitamin D in weekly doses instead of daily doses.

Fodor, M. 1934

(Absorption von Vitamin D durch die Haut.)

Zeit. Vitaminforschg., 3, p. 241. (Jahresbericht. der Pharmaz., 94, p. 287.)

(Tells of curing rachitic rats by applying vitamin D in an olive oil base.)

Knapp, A. & Coward, K. 1934

Vitamin D in Cacao Shell.

Analyst., 59, p. 474. (Yrbk. A. Ph. A., 23, p. 221; Jahresbericht. der Pharmaz., 94, p. 287.)

Experimentation showed that a sample of shell from Gold Coast cacao was rich in vitamin D.

Lüttringhaus, A. 1934

(Vitamin D.)

Zeitsf. Anfew. Chem., 47, p. 552. (Jahresbericht. der Pharmaz., 94, p. 287; Chem. 2, p. 2415.)

(A review of work done on vitamin D up until this time.)

(Second International Conference.) 1934

Vitamin Standardization.

Lancet, 1934, v. 2, p. 44. (Jahresbericht. der Pharmaz., 94, p. 282; Chem. Centralbl., 1934, 2, p. 1154.)

Discusses the international standard for vitamin D.

Underhill, S. 1934

Clinical Applications of Vitamin Studies.

Pharm. Jour., 133, p. 591. (Yrbk. A. Ph. A., 23, p. 157.)

Lists outstanding advancements as concerns the functions of vitamin D, especially the discovery of its relationship to dental caries.

Anon. 1935

Vitamin D by Inunction.

Chem. & Drugg., 123, p. 281. (Pharm. Abstr., 2, p. 169.)

Gives further proof of the ability of vitamin D absorbed by the skin to prevent and cure rickets in animals.

(Editor.) 1935

Vitamin "A" and "D" Products.

Jour. Am. Pharm. Assoc., 24, p. 429.

Outlines a proceedure for comparing vitamin A and D potency with a stated volume of cod liver oil.

Franzetti, C. 1935

(Vitamins A and D and Comphor Oil.)

Semana Med. (Bueuos Aires), 42, p. 998. (Phar. Abstra., 1, p. 354.)

(Found that local application of 7% camphor oil with vitamin A and D given orally removed toxic symptoms produced by burns.)

Fuchs, L. & Beck, Z. 1935

Eine Wertbestimmung von Lösungen des Vitamin D in Fetten Ölen Auf Spektrographischen Wege.

Phar. Presse, 40, p. 411. (Pharm. Abstr., 2, p. 47.)

Review methods in use and those proposed for determining the activity of vitamin D containing preparations.

Fuchs, L. & Beck, Z. 1935

Eine Wertbestimmung von Lösungen des Vitamin D in Fetten Ölen Auf Spektragraphischen Wege.

Phar. Presse, 40, p. 423 & 432 & 447. (Pharm. Abstr., 2, 153.)

Give data on experiments determing vitamin D content of fatty oils by spectrographic methods.

Heibron, J. & Spring, F. 1935

Chemistry of Some of the Irradiation Products of Ergosterol.

Jour. Soc. Chem. Ind., 54, p. 795. (Pharm. Abstr., 2, p. 19.)

A discussion of the various structural formulas assigned to calciferol.

Jeana, P. & Stearns, G. 1935

(Cod Liver Oil Concentrate.)

Proc. Soc. Exptl. Biol. Med., 32, p. 1464. (Pharm. Abstr., 1, p. 346.)

(Discuss the retention of calcium by infants fed milk containing 400 U. S. P. units of vitamin D per quart.)

Messini, M. & Cappa, M. 1935

(Hormones and Vitamins--Relations between)

Arch. Ist. Biochem. Hal., 7, p. 195. (Pharm. Abstr., 3, p. 2413; "Chimie & Industrie", 36, p. 965.)

(Irradiated ergosterol when given to thymectomized rabbits did not cause any calcium increase.)

Moness, E. & Christiansen, W. 1935

An Attempt to Ketonize Ergosterol.

Jour. Am. Pharm. Assoc., 24, p. 115. (Pharm. Abstr., 1, p. 58.)

Give the details of experimental work on attempts to ketonize ergosterol.

Morgan, R. & Pritchard, H. 1935

Vitamin Potency and Associated Characteristics of Average Cod Liver Oil.

Analyst, 60, p. 355. (Pharm. Abstr., 1, p. 219.)

Give data on determinations made on various samples of oil for their vitamin content.

Rugh, O. 1935

Non-Identity of Vitamin D_2 and the Natural Vitamin A from Cod Liver Oil.

Nature, 136, p. 396. (Pharm. Abstr., 2, p. 89; Squibb Abst. Bull., 8, p. 1490.)

Shows a difference in vitamin D from cod liver oil and that obtained from irradiated ergosterol.

Rugh, O. 1935

Non-Identity of Vitamin D (Irradiated Ergosterol, Calciferol) and the Natural Vitamin D from Cod Liver Oil.

Nature, 136, p. 397. (Chem. & Drugg., 123, p. 400; Jahresbericht. der Pharmaz., 72, p. 287.)

Present experimental evidence to show differences between vitamin D_2 and natural D.

Strauss, K. 1935

Unsere Erfahrungen mit Lebertransalbe "Unguentolan."

Dent. Med. Wochschr., 61, p. 50. (Pharm. Abstr., 1, p. 193.)

Find that the action of vitamins A and D seems to cause a marked regeneration of tissue. Parenteral use is superior to oral in this respect.

Von Mallinckrodt, S. & Haupt, A. 1935

(Content of Vitamin D in Salve Bases Conatining Cholesterol.)

Zeit. Vitaminforsch, 4, p. 16. (Pharm. Abstr., 1, p. 190; Chem. Abstr., 29, p. 3463.)

(By irradiation vitamin D is produced in various salves which are absorbed through the skin and then exert antirachitic action.)

Anon. 1936

Vitamin D_3.

Pharm. Jour., 137, p. 277. (Pharm. Abstr., 3, p. 11.)

Using parallel chicken and rat expeiments it was found that the antirachitic factor in fish livers differs from that of irradiated ergosterol and calciferol.

Bacharach, A. 1936

Chemistry of Calciferol and Vitamin D_3.

Nature, 138, p. 387. (Pharm. Abstr., 3, p. 80; Scient. Abstr., 7, p. 227.)

Present a review on recent work on vitamin D. A detailed discussion is included on the absorbability of various sterols.

Bacharach, A., Allchorne, E. & Glynn, H. 1936

Line Tests for Vitamin D.

Biochem. Jour., 30, p. 2004. (Pharm. Abstr., 4, p. 137; Quart. Jour. Phar. Pharmacol., 10, p. 264.)

Repeat the results of experiments which reveal that in giving divided daily doses of vitamin D Greater healing occurred than in the single dose technic of Coward and Key.

Bailey, B. 1936

(Nutritive Value of Marine Products.)

Jour. Biol. Board Can., 2, p. 431. (Pharm. Abstr., 4, p. 133; Jour. Soc. Chem. Ind., 56, p. 976.)

(Give vitamin D content of different samples of canned salmon.)

Brockmann, H. & Chen, Y. 1936

Über eine Methode zur Quantitativen Bestimmung von Vitamin D.

Zeits. Physiol. Chem., 241, p. 129. (Jahresbericht. der Pharmaz., 96, p. 319; Centralbl., 1936, v. 2, p. 1374.)

Describe in detail a method for the quantitative determination of vitamins D_2 and D_3.

Brochmann, H. & Chen, Y. 1936

Quantitative Estimation of Vitamin D.

Hoppe-Seyl. Zeit., 241, p. 129. (Pharm. Abstr., 3, p. 178; Physiol. Abstr., 21, p. 959.)

Discusses the use of antimony trichloride in the quantitative determination of vitamins D_2 and D_3. Colorimetric methods are employed.

Coward, K. & Morgan, B. 1936

Vitamins A and D in Common Foods.

Pharm. Jour., 135, p. 600. (Pharm. Abstr., 2, p. 135.)

The values found for the vitamin D content in some common foods are given with a brief discussion as to their value.

Halden, W. & Tzoni, H. 1936

A Color Reaction for the Detection and Determination of Vitamin D.

Nature, 137, p. 909. (Pharm. Abstr., 3, p. 406; Quart. Jour. Pharm. & Pharmacol., 9, p. 731; Jahresbericht der Pharm., 96, p. 318.)

Give details on a color test for the vitamin in a specially prepared solution from which vitamin A and related substances have been removed.

Heilbrom, J., Jones, R., Samant, K. & Spring, F. 1936

The Constitution of Calciferol.

Jour. Chem. Soc., London, p. 905. (Jahresbericht. der Pharmaz., 96, p. 319; Chem., p. 892.)

Discuss the constitution of calciferol (vitamin D_2) as it is thought to be from quantitative studies.

Hooper, C. 1936

(Vitamin Preparations Contining Vitamin D.)

Assignor to Winthrop Chem. Co. Inc. M. S. pat. 2,030,792, Feb. 11. (Pharm. Abstr., 2, p. 177.)

(Gives data on obtaining a stable vitamin D preparation that is miscible with water.)

Koch, E. & Koch, F. 1936

Provitamin D Potency of Some Sterol Derivatives.

Jour. Biol. Chem., 116, p. 757.

Express their belief that the provitamin in heated, purified cholesterol is not 7-dehydrocholesterol but something quite different.

Lindholm, H. 1936

(Über die Chemischen und Physikalischen Konstanten des Lebertrans.)

Dansk. Tidsakr. Farmaci, 10, p. 25. (Jahresbericht. der Pharmaz., 96, p. 152; Chem. Centralbl., 1936, v. 1, p. 4940.)

(Lists the factors which might reduce the vitamin potency of cod liver oil.)

Linsert, O. 1936

Vitamin D--Irradiation of-

Pharm. Abstr., 2, p. 201.

The irradiation of vitamin D forms a product antirachitically inactive but which increases the blood calcium level.

Matsko, S. 1936

(Vitamin D--Determination of-)

Vaprosy Pitaniya, 5, p. 57. (Pharm. Abstr., 4, p. 102; Chimie & Industie, 38, p. 106.)

(Give a comparison of the prophylatic unit and the international unit of vitamin D.)

Neracher, O. & Rechstein, T. 1936

(Concentration of Vitamin D.)

"Helv. Chim. Acta.", 19, p. 1382. (Pharm. Abstr., 4, p. 493; Chimie & Industrie, 39, p. 123.)

(Gives a method in detail for concentrating vitamin D from tunafish liver oil.)

N. V. Philips' Gloeilampenfabrieken. 1936

(Provitamin D and Antirachitic Food.)

Belg. pat. 415,556, June 30.

(An irradiated provitamin D preparation separated from duck eggs patented in Belgium is discussed.)

N. V. Philips' Gloeilampenfabrieken. 1936

(Preparation of Provitamin D Products.)

Belg. pat. 416, 160, July 31. (Pharm. Abstr., 3, p. 128.)

(Discusses the esterfication of a viatmin D preparation and how the vitamin content is increased.)

Schuler, R. 1936

Skin Absorption of Vitamin D.

Drug & Cosmetic Ind., 38, p. 485. (Pharm. Abstr., 2, 326.)

Describes some of the work concerning the skin absorption of vitamin D done up to this time.

Schuler, R. 1936

Absorption des Vitamin D Durch die Haut.

Der Parfümeur, 10, p.633. (Jahresbericht. der Pharmaz., 96, p. 319.)

Discusses the absorption of vitamin D through the skin for the cure of rickets.

Tzoni, H. 1936

Quantitative Bestimmung des Vitamins D.

Biol. Zeit., 287, p. 18. (Jahresbericht. der Pharmaz., 96, p. 319; Chem. Centralbl., v. 2, p. 3560.)

A colorimetric method for the quantitative determination of vitamin D is given.

Wendt, G. 1936

Three Vitamin Ds.

Problens Nutrit., 4, p. 31. (Jahresbericht. der Pharmaz., 96, p. 318; Chem. Centralbl., 1937, v. 1, p. 918.)

Gives experimental proof of the existence of 3 different vitamin Ds.

Wien, R. 1936

Vitamin Deficiency and the Resistance of Rats.

Quart. Jour. Pharm. & Pharmacol., 9, p. 268. (Pharm. Abstr., 3, p. 12.)

Gives results of tests performed on rats to remedy deficiency of vitamins A, B and D.

Anon. 1937

Sources of Vitamins.

Pharm. Jour., 139, p.37. (Pharm. Abstr., 4, p. 27.)

Lists the best sources of vitamin D.

Bacharach, A. 1937

Antirachitic Potency of Vitamin D.

Food, 6, p. 180. (Jour. Soc. Chem. Ind., 56, p. 6; Pharm. Abstr., 3, p. 315.)

Reviews the present knowledge of the various forms of vitamin D as to their potency.

Brockmann, H. 1937

Die Isolierung des Antirachitischen Vitamins aus Hailbutt Leberöl.

Zeits. Physiol. Chem., 245, p. 96. (Pharm. Abstr., 3, p. 248; Squibb Abstr. Bull., 10, p. 534.)

Describes the isolation of the vitamin from halibut oil, showing the vitamin to be D3, confirming the findings of Hanson and Steenboch.

Brockman, H. & Busse, A. 1937

Über das Antirachitische Vitamin aus Bluefin Thune-Leberöl.

Zeits. Physiol. Chem., 249, p. 176. (Pharm. Abstr., 4, p. 292; Squibb Abstr. Bull., 10, p. 1943.)

Conclude that the vitamin obtained from Bluefin tuna is D_3, like that of the tuna-fish and halibut liver oils.

Ceder, E. & Zon, L. 1937

Vitamin D in Psoriasis.

U. S. A. Public Health Reports, 52, p. 1580. (Pharm. Jour., 140, p. 211; Pharm. Abstr., 4, p. 533.)

Give results of experiments performed on humans affected with psoriasis, showing the curative effects of vitamin D when given in large doses.

Heymann, W. 1937

(Importance of the Liver for Vitamin D.)

Proc. Soc. Exptl. Biol. Med., 36, p. 812. (Pharm. Abstr., 3, p. 549.)

(Found that rats with damaged livers did not respond to vitamin D treatment.)

Hon, H. 1937

Vitamin D.

Chinese Med. Jour., 51, p. 519. (Pharm. Abstr., 3, p. 250; Squibb Abstr. Bull., 10, p. 990.)

Tables are given showing the different forms of vitamin D and the distribution of ergosterol in plants and animals.

Kringstad, H., Lunde, G. & Aschehong, V. 1937

Fish as a Source of Vitamins A and D.

Ind, Eng. Chem., 29, p. 1107. (Phar. Abstr., 4, p. 137.)

From experimentation it was established that no loss of vitamin A and D occurs as a result of the smoking, canning process or the storage of the canned product.

Nicolaysen, R. 1937

Studies Upon the Mode of Action of Vitamin D.

Biochem. Jour., 31, p. 122.

Discusses the influence of vitamin D on the absorption of calcium and phosphorus in the rat.

Nicolaysen, R. 1937

Studies Upon the Mode of Action of Vitamin D.

Biochem. Jour., 31, p. 323.

Compares the rate of calcium absorption with the concentration of vitamin D, both in normal and vitamin D-deficient rats.

Nicolaysen, R. 1937

Studies Upon the Mode of Action of Vitamin D.

Biochem. Jour., 31, p. 1086. (Pharm. Abstr., 4, p. 490; Physiol. Abstr., 22, p. 1057.)

Discusses the role that vitamin D plays in the absorption of phosphates.

Presnell, A. 1937

Relation of Vitamin D to Skin Respiration.

Jour. Biol. Chem., 121, p. 51. (Pharm. Abstr., 4, p. 210; Squibb Abstr. Bull., 10, p. 2030.)

Shows how the oxygen uptake of rachitic animals, which is about 60% normal, is raised to normal upon treatment with vitamin D. Give their explanation for the change.

Rothenheim, C. 1937

(Eight Forms of Vitamin D.)

Pharm. Monatsh., 18, p. 105. (Pharm. Abstr., 4, p. 26)

(The properties of vitamin D are discussed, indicating the possibility of 8 forms of the vitamin.)

Rothenheim, C. 1937

Es Gibt Acht Formen Vitamin D.

Schw. Ap. Zeitz., 75, p. 589. (Jahresbericht. der Pharmaz., 72, p. 287; Chem. Centralbl., 1937, v. 2, p. 4062; Pharm. Abstr., 4, p. 137.)

Presents a review on the eight different forms of vitamin D.

Schenck, F. 1937

Uber das Kristallisierte Vitamin D_3.

Naturwiss, 25, p. 159. (Pharm. Abstr., 3, p. 250; Squibb Abstr. Bull., 10, p. 718.)

Lists a number of the chemical and physical properties of vitamin D_3.

Shelling, D. 1937

Deterioration of Vitamin D in Aqueous Solution.

Proc. Soc. Exptl. Biol. Med., 35, p. 660. (Pharm. Abstr., 3, p. 178.)

Gives conculsions on tests performed;--
1) Filling in a nitrogen atmosphere caused better preservation.
2) Entire exclusion of air prevents deterioration.

Steck, I., Dentsch, H., Reed, C. & Struck, H. 1937

Further Studies on Intoxication with Vitamin D.

Ann. Internal Med., 10, p. 951. (Pharm. Abstr., 3, p. 106.)

Report studies on dogs and humans receiving massive doses of vitamin D.

Supples, W. 1937

Vitamin D Content of Menhaden Fish Oil.

Ind. Eng. Chem., 29, p. 190. (Pharm. Abstr., 3, p. 128.)

Menhaden fish oil was found to be relatively high in vitamin D content.

Wait, R. 1937

Nachweis der Vitamine A, C and D.

Pharm. Zeitz. H., 78, p. 237. (Jahresbericht der Pharmaz., 72, p. 282; Chem. Centralbl, 1937, v. 1, p. 5071.)

A discussion of vitamins A, C, and D.

Windaus, A. & Trautmann, G. 1937

Crystalline Vitamin D4.

Hoppe-Seyl. Zeit., 247, p. 185. (Pharm. Abstr., 4, p. 154; Physiol. Abstr., 22, p. 933.)

Tell how vitamin D4 was prepared and gives some of its physical and chemical properties.

Bruci, H., Kassner, E. & Phillips, G. 1938

Stability of Vitamin D.

Quart. Jour. Pharm. & Pharmacol., 11, p. 46. (Pharm. Abstr., 4, p. 510.)

Studies calciferol in 5 different oily solvents were made by a biological assay and the results obtained tabulated.

Lunde, G., Aschehong, V. & Kringstad, H. 1938

Fish as a Source of Vitamins A and D.

Ind. Eng. Chem., 29, p. 107. (Pharm. Abstr., 4, p. 137.)

Fresh, smoked and canned brisling and herring, caught in different localities, in different years, and at different periods of the year were tested for vitamin A and D potency.

Rothenheim, C. 1938

(Vitamin D--Eight Forms.)

Schweiz. Apoth. Ztg., 75, p.__. (Pharm. Abstr., 4, p. 137.)

(Gives a review of the more recent work on vitamin D, and states that 8 modifications of the vitamin showing antirachitic properties are recognized.)

Sobel, A., Wexler, I., Petrovsky, O. & Kramer, B. 1938

Influence of Dietary Calcium and Phosphorus Upon Action of Vitamin D in Lead Poisoning.

Proc. Soc. Exptl. Biol. Med., 38, p. 435. (Pharm. Abstr., 4, p. 525.)

The increase in lead absorption produced by vitamin D is counteracted by a diet high in phosphorus and low in calcium.

Sumi, M. 1938

(Vitamin D Derivatives and Some Sterols.)

Jour. Agric. Chem. Soc., Japan, 12, p. 1211. (Pharm. Abstr., 4, p. 572; "Chimmie & Industrie", 39, p. 123.)

(Give various physical properties of different vitamin D derivatives and sterols.)

Taylor, M., Klein, O. & Russell, W. 1938

Photographing Line Tests in Vitamin D assays.

Ind. Eng. Chem. Anal. Ed., 30, p. 26. (Pharm. Abstr., 4, p. 572.)

The technique for staining and photographing rat bones is described.

Whittier, C. 1938

(Method of Producing Vitamin D.)

U. S. pats. 2,106,779 to 2,106,782 incl., Feb. 1. (Pharm. Abstr., 4, p. 563.)

(Give details in each patent of a method of irradiating ergosterol.)

Jahresbericht der Pharmaz(ie), v. 86, 1926 through v. 92, 1932, & v. 94, 1934 & v. 96, 1936 through v. 72, 1937.

Jour(nal) Am(erican) Med(ical) Assoc(iation), v. 93, 1929 through v. 101, 1933.

Jour(nal) (of) Biol(ogical) Chem(istry), v. 15, 1913 & v. 34, 1918 & v. 45, 1921 through v. 56, 1923 & v. 63, 1925 through v. 100, 1933.

Jour(nal) A(merican) Ph(armaceutical) A(ssociation), v. 10, 1921, & v. 12, 1923 & v. 14, 1925 through v. 18, 1929.

Pharm(aceutical) Abatr(act), v. 1, 1935 through v. 4, 1938.

Y(ea)rb(oo)k A(merican) Ph(armaceutical) A(ssociation), v. 12, 1922 & v. 13, 1923 & v. 14, 1925 through v. 23, 1933.

Approved by W. O. Richtmann

Prof. of Pharmacognacy

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