# BIBLIOGRAPHY

of

# BENZOIN

by

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Ludovici, D. 1685

De Pectoralibus Aperitivis

De Pharmacia, 1 ed., p. 407.

Mentions the use of benzoin in pectoral troubles.

Lemery, N. 1721

Benzoinum

Materialien Lexicon, p. 158.

Gives a description of Benzoin, the different grades and the habitat of the benzoin tree.

Boerhaave, H. 1754

Benzoinum

Materia Medica, or The Druggist's Guide, and The Physician and Apothecarip Table--Book, p. 51.

Gives a description of the drug and a list of the uses for it with another suggested method for its use.

Lewis, W. 1761

Benzoinum

An Experimental History of the Materia Medica, etc. p. 128.

Describes the drug and its botanical source, an account of its pharmacentical properties, and an estimate of its medicinal powers.

Lewis, W. 1771

Benzoinum

Materia Medica, oder Beschreidrug der einsachen Arzneumiltel, p. 129.

Reports on the physical properties of the Benzoin and its chemical constituents as then known and describes the botanical source of the drug.

Cox, J. R. 1825

Benzoinum

Am. Dispens., 6 ed., p. 132; ibid., 7ed., p. 132; ibid., 8 ed., p. 132; ibid., 9 ed., p. 146.

Gives several titles of the drug, the geographical habitat and a discussion of methods of obtaining benzoic acid from it.

Richard, A. 1827

Benzoin

Dictionnaire Des Drogues, V. 1, p. 407.

Gives detailed information as to description of Benzoin and the several uses to which it is put.

Murray, J. 1828

Expectorants

System of Materia Medica & Pharmacy, p. 237.

Under the above heading gives a brief summary of Benzoin as to its physical and medical properties and uses as an expectorant.

Brown, S. W. 1834

Benzoin, and Benzoic Acid

Am. Journ. Pharm., 5, p. 113.

Gives the percentages of benzoic acid obtained from the white and brown portions of Benzoin and the amounts of acid obtained from tolu, styrax and balsam of Peru.

Wood, G. B. & Bache, F. 1834

Benzoinum. U. S.

Dispense U. S. A., 2 ed., p. 131; ibid., 3 ed., p. 132; ibid., 4 ed., p. 133; ibid., 5 ed., p. 140; ibid., 6 ed., p. 140; ibid., 7 ed., p. 140; ibid., 8 ed. p. 142; ibid., 9 ed., p. 143; ibid., 10 ed., p. 144; ibid., 11 ed., p. 150;

Gives several pharmacopocial titles, a general account of the botanical source, the method of obtaining the juice with the physical properties of the juice, the medicinal properties, uses and official preparations of the latter.

Planche, M. 1838

Observations Upon the Form, or Apparent State, Which the Combinations of Certain Bodies with Camphor Assume, and Upon the Properties which these Bodies Possess of Masking, Diminishing, or Exhalting Its Odor.

Am. Journ. Pharm., V. 10, p. 214.

States that on mixing of camphor and benzoin the mixture becomes soft on exposure to air and the odor of camphor is only feebly retained.

Hazn, -- 1840

Benzoin Officinale

Real Lexikon, 1, p. 189.

Gives a description, habitat of the plant, and constituents of Benzoin.

Lepage, M. 1851

(On Chloroform as a Solvent)

Am. Journ. Pharm., V. 24, p. 147.

("Journal de Chemic Medicale --,--

Gives account of solubility of benzoin in chloroform along with several other resinous substances some of which might prove useful as varnishes.

Original was not available.

Guthrie, J. 1853

Circular of Instructions to the Special Examiners of Drugs.

Am. Journ. Pharm., 25, p. 302;

(North American, June 14th, 1853.

Gives qualifications for entrance into this country of Benzoin as to per cent of resin, or per cent of benzoic acid.

Original not available.

(Editor) 1854

Zinc Ointment With Benzoin

Pharm. Journ. and Trans. 14, 207.

Gives information concerning the addition of benzoin and benzoic acid to zinc oxide ointment, mainly concerned with its preservative properties.

Opwijrda, R. J. & Nortier, H. K. 1854

Styrax Benzoin & Siamesche-Benzoe

Handboek voor Droagisten-Eu Apothekers-Leerlingen, 1 ed., p. 385.

Gives a description of several types of benzoin known at that time.

Piesse, S. 1854

(On Perfumery)

Am. Journ. Pharm., V. 26, p. 277.

(Annals of Pharmacy --,--

Gives use to perfumers as basis for a bouquet and as giving permanence and body to a perfume made with an essential oil in spirit.

The original was not available.

(Editor) 1861

(On Acids of Benzoin. --)

Am. Journ. Pharm., V. 33, p. 378;

(Journ. and Trans. Md. Coll. Pharm. from Wittst. Vierteljahrsschr. --,--

In the Varieties section is written that brown or blackish masses of benzoin yield more benzoic acid than the whitish tears. Whitish tears yield another acid which oxidizes to oil of better almonds.

The original was not available.

Kolbe, -- & Lauteman, -- 1861

On the Acids and Resin of Benzoin

Am. Journ. Pharm., V. 34, p. 256.

(Annal. der Chem. and Journ. de Pharm., 48, p. 91.

Doliber, T. 1868

On the Use of Benzoin in Ointments

Drugg. Circ., 12, p. 56.

Proc, Am. Pharm. Assoc., 14, p. 224.

A long list of experiments on different ointments with benzoin as a preservative and results obtained is given.

Wood, G. B. & Bache, F. 1869

Benzoinum U. S., Br.

Dispens. U. S. A., 12 ed., p. 164; ibid., 13 ed., p. 172; ibid., 14 ed., p. 175; ibid., 15 ed., p. 286; ibid., 16 ed., p. 291;

Gives several pharmacopocial titles, a general account of the botanical source, the method of obtaining the juice along with the physical properties of the juice, the medicinal properties, uses and official preparations of the latter. Mention is also made of the discovery that benzoin contains cinnamic acid.

Löwe, J. 1870

On Benzoic Acid and Gum Benzoin

Am. Journ. Pharm., V. 42, p. 369;

(Chem. News, Lond., 6, 346.

Benzoic acid not a product of oxidation of resin during melting of same but is pre-existent in the resin.

Löwe, J. 1870

On Benzoic Acid and Gum Benzoin

Am. Journ. Pharm. 42, p. 406;

(Proc. A. Ph. A., 19, p. 221

(Chem, News, 21, p. 346.

Concludes that some free benzoic acid is present in the resin, but that the greater portion is generated on heating, from one of the proximate principles contained in benzoin.

Schulz, J. H. 1873

(Benzoin)

Proc. A. Ph. A., 21, p. 478

(Chic Pharm., 1873, p. 69

Reports the finding of an adulteration which seemed to be hemlock bark.

Original not available.

(Editor) 1875

The Growth and Uses of Benzoin

Am Journ. Pharm. , 76, p. 75.

(The Chem. and Drugg., 17, p. --

Gives account of growth, collection, and uses of the drug, benzoin, along with a detailed description of the Siam and the Sumatra varieties.

Cardanus, H. 1876

Contributions Toward the History of Some Drugs.

Am. Journ. Pharm., 48, p.363

Among a number of drugs gives origin and uses of benzoin.

(Editor) 1876

Benzoin

Am. Journ. Pharm., 48, p. 571.

Gives account of benzoin which was translucent and said to come from Zanzibar.

Flückiger, F. A. 1876

Contributions toward the History of Some Drugs.

New Rem., 5, p. 229.

Gives evidence that benzion had been introduced as a commercial article in the beginning of the sixteenth century and was used mainly for the production benzoic acid.

Cauvet, D. 1877

Benjoin

Nouveaux Elements D' Histoire Naturelle Medicale, V. 2, p. 568

Gives the habitats of different types of Benzoin, in what form they occur, and other information concerning the constituents of it.

Berg, O. 1879

Resina Benzoë

Pharmazeutische Waarenkunde, 2 ed., p.352; ibid., 3 ed., p.530.

Gives a detailed description of the different types of benzoin as classified by himself.

Rump, C. 1879

Die Auffindung des Vanillins in der Siam-Benzoë.

Proc. A. Ph. A., 27, p. 174

(Ber. d. d. Ch. Ges., 1878, p.1634; Drugg. Circ., 23, p. 58.

Gives method of extraction of vanillin from Siam Benzoin.

Stille, A. & Maisch, J. M. 1879

Benzoinum. U. S., Br.

National Dispensatory, 1 ed., p. 279; ibid., 2 ed., p. 282; ibid., 5 ed., p. 334.

Gives several pharmacopoeial titles, a general account of the botanical origin, collection, commerce, description, constituents, the physiological action and medical uses of Benzoin.

Saalfeld, E. 1880

Palembangbenzoe

New Rem., 9, p. 245.

Arch. d. Pharm., 13, p.280.

Describes "Palembang" as being entirely devoid of cinnamic acid but thinks that it might be used to advantage in the production of benzoic acid.

(Editor) 1883

Benzoin

New. Rem., 12, p. 95.

Benzoin is reported by B. F. Scholl to be better than styrax as a preservative of Ointments. The latter will answer the purpose only if kept for 2 or 3 months.

Holmes, E. M. 1883

The Trees Yielding Benzoin.

Pharm. Journ., 43, p. 355

(Pharm. Rec., 3, p. 466

Gives a lengthy discussion on the different sources of benzoin, vivid description of the plants, the time of flowering ant the time incisions are made.

Holmes, E. M. 1883

The Trees Yielding Benzoin.

Am. Journ. Pharm., 55, p.619

Gives information concerning the 4 varieties of Benzoin in English commerce, and the botanical sources from which they are obtained.

Holmes, E. M. 1883

On Trees Yielding Benzoin

Chem. & Drugg., 25, p. 503;

Gives information concerning the gifts of benzoin samples by R. Jamie, of Singapore to the Museum of the Chemist and Druggist, and notes on the gum as an article of Commerce.

Merrell, A. 1883

Benzoinum. Gum Benzoin.

Digest of Materia Medica & Pharmacy, 1 ed., p. 126

Reports the constituents, preparations and uses of Benzoin.

Scholl, B. F. 1883

Comparative Value of Benzoin and Styrax In the Preservation of Ointments.

In an inaugural essay, he gives results of experiments conducted with styrax and tincture of benzoin, respectively as a preservative for simple cerate and for lard.

(Editor) 1884

Substances Contained in Benzoic Acid from Sublimed Gum Benzoin

Chem. & Drugg., 26, 350;

Gives a list of the substances contained in Benzoic Acid from pure gum benzoin. Says the chief medicinal value lies in the benzcatechin and guajacol.

Japp, F. R., & Wilson W. H. 1885

On Ammonia-Derivatives of Benzoin

Pharm. Journ., 45, p. 1021

In Proceedings of Societies of London section, he gives results of experiments on the reaction of alcoholic ammonia with benzoin.

Maisch. J. M. 1885

Minutes of the Pharmaceutical Meeting

Am. Journ. Pharm., 57, p. 153;

States that the quality of resins and gum resins, including benzoin could not be estimated by mere appearance.

Mc Elhenie, T. D. 1885

Purified Benzoin.

Pharm. REcord., 5, p. 262.

(Drugg. Circ., 29, p. 232;

Suggests that wholesalers of benzoin make a purified product and gives a possible method with the disadvantages of that method.

Pocock, J. T. 1885

(Old Benzoin.)

Pharm. Journ., 45, p. 927;

Tells of the recovery by divers of over a ton of benzoin after having been burried and exposed to sea

water for a period of 195 years.

Ahern, W. 1886

A Pharmaco-Philological Medley.

Pharm. Record., 6, p. 171.

The etymology of the word Benzoin from luban-jaivi, or Javanese Frankincense, is discussed.

(Editor) 1886

Given Up By The Sea.

Chem. & Drugg., 28, p. 385;

Gives an interesting tale of the possibility of this particular parcel of Palembang benzoin having been shipped from Palembang by the Dutch in the 17th century and recovered from the sea off the cape of Good Hope.

(Editor) 1886

Palembang Benzoin

Chem. & Drugg., 28, p. 507;

In a series of materia medica notes, gives particulars regarding the quality of the benzoin recovered

from the sea, its acid content, water content and ash content.

Marme, W. 1886

Benzoë

Lehrbuch Der Pharmacognosie Des Pflanzen Und Thierreichs, 1 ed., p. 594;

A detailed discussion of Benzoin including its history, habitat, chemistry, physical properties, uses and preparations.

Popcock, J. T. 1886

Given Up By the Sea

Chem. & Drugg., 28, p. 393;

Reports in detail the recovery of over a ton of benzoin from a wrecked vessel off the Cape of Good Hope.

Schmidt, C. 1886

Caoutchouc In Benzoin

Am. Journ. Pharm., 58, p. 351;

Caoutchouc was found in one sample of Benzoin, and feels that it must have been present as an impurity and not a natural constituent of the drug.

Moody, T. F. 1888

## Assay of Benzoin

Am. Journ. Pharm., 60, p. 606;

(Proc. A. Ph. A., 37, p.449)

In an inaugural essay gives the results of the assay of benzoin for benzoic acid showing that cinnamic acid was present in each case.

(British Consul) 1889

## Gum Benjamin

Chem. & Drugg., 34, p. 571;

Gives a brief account of the route from the point of origin of benzoin in Siam to Bangkok, its place of shipment.

(Editor) 1890

## Almondy Benzoin

Chem. & Drugg., 36, p. 740;

In materia medica notes gives an account of a case of adulteration in which pebbles of talc were imbedded in a brown body of gum to give the product the appearance of a good grade of benzoin.

(Editor) 1890

Crude Drugs At the London Drug Shaw Rooms

Am. Drugg., 19, p. 161;

Gives information concerning the types of benzoin on the London market and the method by which they are marketed.

Tschirch, A. 1890

Benzoin And Cinchona

Chem. & Drugg., 36, p. 132.

Gives account of recently established plantations of gum benjamin trees in Java and notes that benzoin does not pre-exist in the tree but is a product of a disease.

(British Consul) 1891

(Siam Benzoin)

(Chem. & Drugg., 39, p. 346.)

Gives another route for the bringing out of benzoin and mentions that the 3 % duty paid is on the article in Bangkok.

(Editor) 1891

Commercial Varieties of Benzoin

Describes the several commercial varieties and gives a detailed account of the collection of benzoin.

(Editor) 1891

Gum Benzoin

Am. Drugg., 20, p. 10.

Gives data on the customary size of a case of benzoin and the route it takes from Tonquin to Bangkok.

(Editor) 1891

Gum Benzoin

Pharm. Era, 5, p.76.

Gives a description of the four commercial varieties of benzoin and the trade routes they followed to get to Bangkok, the shipping port.

(Editor) 1891

The Varities Of Benzoin

Chem. & Drugg., 39, p. 486.

Gives an interesting account of the geographical sources of benzoin, the different commercial varieties of benzoin and the method of starting and working a benzoin plantation.

(Editor) 1892

Benzoin

Chem. & Drugg., 40, p. 308.

Gives brief description with a picture of the benzoin tree.

Edel, F. 1893

Benzoin vs. Peru Balsam As An Ointment Preservative

Drugg. Circ., 37, p. 184.

Gives account of experiments made in comparing the effectiveness of Peru Balsam and Benzoin as preservatives.

(Editor) 1893

Siam Benzoin

Chem. & Drugg., 43, p. 534.

Gives an estimation of the amount of the constituents of Siam Benzoin.

(Editor) 1893

Sumatra Benzoin

Pharm. Era, 9, p. 489.

Calls attention to Tschirch's observation that the benzoin trees neither contain secretion nor secretion cells, and that the balsam only would exude after wounding the tree.

Also gives the results of a test on Sumatra Benzoin as to the constituents present.

(Editor) 1893

(A New Haemostatic)

Pharm. Era, 10 , p. 547.

Comments on the method of preparation of benzoin alumina cotton.

Wood, G.B., Remington, J.P. and Sadtler, S.P. 1894

Benzoinum U. S., Br.

Dispens. U.S.A., 17 ed., p. 260; ibid., 19 ed., p. 231; ibid., 20 ed., p. 227.

Gives several pharmacopocial titles, a general account of the botanical source, the method of obtaining the juice along with the physical properties of the juice, the medicinal properties, uses and official preparations of the latter. Mention is also made of the

discovery that benzoin contains cinnamic acid along with styrol, $C_8H_8$ (styrene). A process for purification of the balsam and methods for preparation of a styptic liquid and of fumigating pastiles are given.

(Editor) 1895

Siam Benzoin and Gamboge

Chem. & Drugg., 46, p. 730.

Gives an account and a map of the route Siam Benzoin has taken previous to the above date and the possible or probable route used from this date henceforward since France annexed a part of Siam.

Maisch, J. M. 1895

Benzoinum-Benzoin

Organic Materia Medica, 6 ed., p. 439.

Lists in textbook fashion the botanical origin, production, description, varieties, constituents and properties of Benzoin.

Dunlop, T. 1897

The Pharmaceutical Value of Sumatra Benzoin

Chem. & Drugg., 51, p. 278.

(Am. Journ. Pharm., 69, p. 461;)

Classifies benzoin into two groups with several tables concerning percentage of impurity in the drug and the pharmaceutical uses of the drug.

Dunlop, T. 1897

Sumatra Benzoin of Commerce

Chem. & Drugg., 51, p. 390.

An answer in the form of a letter to the criticism by A. Seyler.

(Editor) 1897

Sumatra Benzoin

Chem. & Drugg., 51, p. 302.

Gives a review of Dunlop's work on Benzoin.

Seyler, C. A. 1897

Benzoin

Chem & Drugg., 51, p. 352.

Makes a correction in Dunlop's paper in which he (Seyler) had been incorrectly reported.

Dieterich, K. 1898

Benzoin. A Contribution to B.P. Criticism

Chem. & Drugg., 53, p. 791.

Criticizes the standards of benzoin as set up by the British Pharmacopoeia and suggests tests to be applied to the drug for adoption in that book.

(Editor) 1898

Notes From the Philadelphia College

West. Drugg., 20, p. 40.

Comments on a paper by R. M. Shoemaker on a method of preparing a liquid benzoin for benzoinating lard.

(Editor) 1898

Examination of Benzoin and Guaiacum

Drugg. Circ., 42, p. 135.

Gives data to show the necessity of testing samples

for the amount of non-alcohol soluble residue.

Shoemaker, R. M. 1898

Liquid Benzoin for Benzoinating Lard

Am. Journ. Pharm., 70, p. 9.

Gives a formula for the preparation of a benzoinated liquid to be used for making of benzoinated lard. A formula for a benzoinated lard using liquid benzoin is also given.

Wiegand, T. S. 1898

Minutes of the Pharmaceutical Meeting

Am. Journ. Pharm., 70, p. 53.

Attributes the preservative action of benzoin mostly to the benzoic acid.

Dieterich, K. 1899

Benzoin

Drugg. Circ., 43, p. 13.

Discusses the British Pharmacopoeial description of this substance.

(Editor) 1899

The Position of Benzoin

Chem. & Drugg., 54, p. 639.

Notes the recent advance in the value of Sumatra benzoin and shows by giving figures of the amount of imports, the reason for this advance.

Curtis, A. C. 1900

Notes on Benzoin

Am. Journ. Pharm., 72, p. 485.

In an inaugural thesis gives the results of assays on eight different samples of benzoin and conclusions arrived at as a result of the tests.

(Editor) 1900

London Drug-Auctions

Chem. & Drugg., 57, p. 637.

Gives the amounts of the different types of benzoin offered at a recent auction and the amounts sold. The exports from Singapore for the first 7 months of 1900 are also listed.

Pelter, U. W. & Lloyd, J. U. 1900

Benzoinum (U.S.P.)

King's Am. Dispens., 18 ed., v. 1, p. 342.

Gives a description, the history, botanical origin, chemical composition, action, medical uses, and dosage of Benzoin.

(Editor) 1901

London Drug-auctions

Chem. & Drugg., 59, p. 393.

Gives the prices offered for the benzoin sold and lists the amount exported from Penang and from Singapore to Great Britain, from Singapore to the United States and from Singapore to the continent of Europe.

(Editor) 1901

London Markets

Chem. & Drugg., 59, p. 517.

Sums up the amount of business done with benzoin since the auction and gives figures as to what the exports from Singapore to various markets were.

(Editor) 1901

Commercial Notes

Chem. & Drugg., 59, p. 724.

Gives evidence that the former brisk trade which existed between Northern Siam and Bangkok in gum benzoin has now practically ceased to exist.

(Editor) 1901

London Drug-auctions

Chem. & Drugg., 59, p. 1014.

Reports the condition of the market for benzoin and lists the imports from Singapore in piculs from Jan. 1 to October 31, 1901.

Purcel, R. C. & Graham, W. 1902

(Benzoin-Assay of Commercial Samples)

Proc. A. Ph. A., 51, p. 762.

(Proc. Pa. Pharm. Assoc., 1902, p. 146.

Shows a chart of figures for assays on all grades of benzoin found on the market.

The original was not available.

(Editor) 1902

London Markets

Chem. & Drugg., 60, p. 360.

Gives the price paid for Sumatra and Palembang benzoin and lists the amount exported from Singapore from Jan. 1 to Dec. 31, in piculs.

Gadd, H.W. 1902

Quality of Benzoin

Chem. & Drugg., 60, p. 274.

Agrees with Kemp and Son that the percentage of soluble matter in benzoin averaged between 87-90% and stated that much depended on how the samples were taken, most cases having an outside layer which consists largely of cork.

Kemp, W. & Son 1902

Quality Of Benzoin

Chem. & Drugg., 60, p. 243.

A letter stating that there is no trouble finding Siam Benzoin which meets the boiling point requirements

and that their benzoin was between 87-90% soluble in 90% alcohol.

Barclay, J. 1903

Benzoin

Proc. A. Ph. A., 51, p. 763.

(Pharm. Journ., 70, p. 97.)

In notes on crude drugs, states that B. P. Requirements for Benzoin are too high and gives results of tests on ten samples for solubility, for free acid and for combined acid present.

Apple, F. M. 1906

Hints on Compounding of Glycerin, Benzoin and Rose Water

Am. Journ. Pharm., 79, p. 476.

Gives a method for the compounding of Glycerin, Benzoin, and Rose water.

(Editor) 1906

London Drug-auctions

Chem. & Drugg., 68, p. 278.

An account of 4 cases of Palembang benzoin which had been washed up by the sea off the Cape of Good Hope and a statement that it is identical with the parcel in Crutched Friar's Museum supposed to have been on a ship, wrecked 200 years ago.

(Editor) 1906

Malaya Benzoin

Chem & Drugg., 69, p. 834.

Makes note of a sample of benzoin sent from Kuala Lampur and its value as being about the same as Palembang benzoin. Also gives native name for the tree and an interesting brief description of it.

(Editor) 1906

The British Pharmacopoeia

Chem. & Drugg., 69, p. 863.

Comments on what is thout to be fair standards for the amount insoluble in alcohol and for the ash content.

Bernegau, L. H. 1907

Comments on Some Official Standards and Tests.

(Gum Benzoin)

Am. Journ. Pharm., 79, p. 553.

(Proc. A. Ph. A., 56, p. 206; ibid., Chem. & Drugg., 70, p. 824.)

Gives some of the official requirements that benzoin has to fulfill and also the results of tests made on a sample of dark reddish brown benzoin.

(Editor) 1907

Benzoin

Chem. & Drugg., 71, p. 523.

Gives some interesting information as to the manner in which benzoin is produced.

(Editor) 1907

Benzoin

Am. Drugg. & Pharm Rec., 49, p. 360.

Gives the percentage of solubility of a good grade of benzoin and mentions that the method of sampling is of extreme importance.

Thornewill, A. R. 1907

Commercial Benzoin.

Chem. & Drugg., 71, p. 824;

Comments on the amount of insoluble matter contained in Benzoin.

Holmes, E. M. 1907

Benzoin.

Proc. of A. Ph. A., 55, 782;

(Pharm, Journ., 78, 127

A thorough investigation as to solubility in 90% alcohol of different types of Benzoin.

(Editor.) 1908

London Drug-Auctions.

Chem. & Drugg., 72, p. 946.

States that the market for Benzoin was dull.

(Editor.) 1908

Palembáng Benzoin.

Chem. & Drugg., 72, p. 947.

Mentions another case of benzoin sold which was part of the lot which was supposed to have been buried under the sea for over 2 centuries.

Harvey, T. F. 1908

Pharmacopoeia Revision.

Chem. & Drugg., 72, p. 904;

Believes that a limit of not more than 10% of benzoin insoluble in alcohol was too stringent.

Reinitzer, F. 1909

Über Siambenzoe

Proc. A. Ph. A., 58, p. 189.

(Pharm. Ztg., 54, p. 791.)

Gives part of content of Peinitzer's comprehensive study of the constituents of Siam Benzoin.

(Editor) 1910

London Drug Statistics

Chem. & Drugg., 77, p. 602.

Lists the amount of exports of Siam Benzoin from Bangkok from April 1, 1908 to March 31, 1909, with its value and also the amounts for the corresponding period the year previous.

(Editor) 1910

Benzoin

Chem. & Drugg., 77, p. 795.

Gives information concerning the requirement of different books of drug standards for the drug benzoin, chiefly referring to the more stringent requirements added.

Holmes, E. M. 1910

Notes on Siam Benzoin

Proc. A. Ph. A. 59, p. 203.

(Pharm. Journ. & Pharmacist, 85, p. 515.)

Questions Rordorf's statement that leaves of Siam Benzoin plant are entire and that those of Styrax Benzoin, Dryander, are toothed. He continues with a discussion of the leaves.

Rordorf, H. 1910

Mitteilungen Über Siam-Benzoe

Proc. A. Ph. A., 59, p. 202.

(Schwerz. Wschr. J. Chem. U. Pharm., 48, No. 36, p. 549)

Discusses the botanical source and collection of Siam Benzoin.

(Editor) 1911

New German Pharmacopoeia.

Chem. & Drugg., 78, p. 444.

Gives the requirements for Benzoin of the New German Pharmocopoeia.

Parry, E. J. 1911

Some Suggested Pharmacopoeial Standards.

Chem. & Drugg., 78, p. 378.

Gives suggestions for standards for Benzoin based upon examinations of 30 samples of the drug of good quality and embracing the Siam, Sumatra, and Palembang varieties.

(Editor.) 1912

The Crutched Friars Drug Showrooms.

Chem. & Drugg., 80, p. 754.

Describes the method by which benzoin is marketed in London.

(Editor.) 1912

Scientific Progress.

Chem. & Drugg., 80, p. 550.

Gives information relative to the relation of the Siam Benzoin tree with the Sumatra Benzoin tree.

Cocking, T. T. & Kettle, J. D. 1914

Benzoin. Its Analytical Characters.

Chem. & Drugg., 85, p. 173.

(Yrbk. Br. Pharm. Conf., -(1914), p. 357; U. S. Dispens., 20 ed., p. 229.

Detailed methods of assay and results of benzoin are given with a chart of the results of 11 determinations on different samples.

(Editor.) 1914

Conference at Chester.

Chem. & Drugg., 85, p. 129.

Gives the details of a paper on the various types of assays of benzoin, especially the method of determining the percentage of alcohol-soluble extract.

(Chairman.) 1914

Changes in the New Pharmacopoeia

Pharm. Era., 47, p. 155.

Among other changes recommended, includes those for Benzoin.

Cocking, T. T., & Kettle, J. D. 1914

Benzoin. -- Analytical Characters

Yrbk. A. Ph. A., 3, p. 194

States the analytical data available for the valuation of benzoin is (1) the percentage soluble in 90% alcohol, and (2) the quantity of aromatic (balsamic) acids present, both free & combined. Also gives their methods of analysis.

Hart, F. 1916

Historic Sample of Benzoin.

Yrbk., A. Ph. A., 5, p. 184

Refers to sample of Palembang Benzoin, now in the drug museum of Columbia University College of Pharmacy, which had been shipped in 1691 and accidentally recovered from a wreck in Table Bay in 1885.

Zinke, A. & Lieb, H. 1918

Siaresinol from Siamese Gum Benzoin

Yrbk., of A. Ph. A., 7, 227

Journ. of Chem. Soc. 114, I 398

The authors think siaresinol of Reinitzer (1915) is possibly identical with benzoresinol obtained by Lüdy in 1893. They have prepared from it an acetyl and a benzoyl derivative.

Lieb, H. & Zinke A. 1919

Constituents of Sumatra, gum Benzoin

Yrbk. of A. Ph. A., 8, 202

(Chemical Abstracts, 13, 382

Indicate that Sumatra benzoin dissolved completely in hot diluted aqueous sodium hydroxide and from this solution on cooling, deposits the sodium salt of benzoresinol, melting at 339-341 and probably $C_{29}H_{44}O_4$. The mother liquor, on addition of a little ether, deposits crystals of the sodium salt of sumaresinol, $C_{30}H_{48}O_{48}\cdot 4H_2O$, melting at 298-299°. It is isomeric with siaresinol.

Dorstewitz, R. & Ottersbach, G. 1921

Benzoe

Drogenkunde, 1 ed., p. 91

A brief description of and various uses of the drug.

Mayrhofer, A. 1921

Uber eine minderwertige Resina Benzoe, angeblich Palembangbenzoe mit uberwiegend Rindenbestandteilen.

Yrbk. of A. Ph. A., 10, 214

(Pharm. Ztg., 66, 807;

Reports on an inferior sample of gum benzoin which he thinks might be used in the preparation of the tincture. Not sufficient was known of the plant which is the source of this benzoin to fix the characters of the gum.

Zinke, A. & Dzrimal J. 1921

Le benzoate de lubanyle du benjoin de Siam

Yrbk. of A. Ph. A., 10, 214

(J. pharm. et chim.7e Serie, 24, 350

States that lubanyl benzoate, the constituent of Siam Benzoin, first isoloted by Reinitzer, has been found by Zinke & Dzrimal to be the benzoate of an alcohol (named lubanyl, by Reinitzer) that is identical with guaiacresinol, with lariciresinol & with pinoresinol. They give a formula and a melting point for the benzoate.

Bohrisch. , P. 1922

Zur Untersuchung von Benzoe

Yrbk. of A. Ph. A., 11, 104

(Pharm. Zentralh., 63, 333

Gives the method of examination he used to prove the presence of cinnamic acid, to determine the acid number and the saponification number of different samples of benzoin. (Siam, Sumatra & Palembang)

Wright, H. D. & Kermack W. O. 1923

(Properties of Colloidal Gum Benzoin.)

Yrbk. of A. Ph. A., 12, 214

(Biochem. J. , 17, 635-657; through J. Soc. Chem. Ind., 42, 1081A;

Gives substance used to precipitate colloidal Gum Benzoin and what effects precipitation of the gum both by acid & by salt.

The original was not available

(Editor.) 1924

Benzoin.

Chem. & Drugg., 101, p. 907;

Lists the different commercial kinds of benzoin and their characteristic differences.

Chevalier, A. 1924

(Origin of Indo-Chinese.)

Yrbk. A. Ph. A., 13, 81;

(Rev. Bot. Appl. Agr. Col., 29, 10-19; through Bull. sci. pharmacol., 31, 193;

Geographical locations of place of origin of three species of Styrax are given.

Original book available but no article present.

(Editor) 1925

Benzoin

Yrbk. A. Ph. A. 14, 77;

(Chem. & Drugg., 101, 907;

In commercial compendium brief descriptions of 5 geographical types of benzoin are given.

Rosenthaler, L. 1925

Ueber eine Benzoë-Falschung

Yrbk. of A. Ph. A., 14, 89;

(Schweiz. Apoth. Zeit., 63, 280;

Reports the occurrence in commerce of a spurious Sumatra Benzoin consisting of coniferous resin colored with a coal tar. It is stated to have come from

Russia.

Reinitzer, F. 1925

Untersuchungen über Siambenzoe.

Yrbk. A. Ph. A., 14, 103;

(Arch. d. Pharm., 263, 347

Results of an investigation of Siam Benzoin as to chemical nature are briefly discussed.

Reinitzer, F. 1925

Untersuchungen über Siambenzoe.

Yrbk. of A. Ph. A., 14, 249

(Arch. Pharm., 263, p. 347

Comment is made of the chemical nature of the substance precipitated from ether solution by petrol & thought to be coniferyl benzoate.

Newton, H. C. 1927

Benzoin Milk.

Chem. & Drugg., 108, p. 406;

(Journ. of A. Ph. A., 16, No. 12;

Gives method for the preparation of Benzoin milk.

(Editor.) 1937

Benzoin. U. S. P. Tests.

Chem. & Drugg., 127, p. 507.

States that the specific test for resin in Benzoin has been deleted from the U. S. P. XI because of some discrepancy in this test beteen certain samples of Benzoin.

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Am(erican) Drugg(ists') Circ(ular), 1-8, 1857-1864.

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Drug Bull(etin), 50-55, 1928-1933.

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Pharm(aceutical) Abst(racts), 1-6, 1935-1940.

Pharm(acist) & Chem(ist), 3-18, 1870-1885.

Pharm(aceutical) Rec(ord), 3-15, 1883-1893.

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Proc(eedings) of A(merican) Ph(armaceutical) A(ssociation), 1-59, 1851-1911.

West(ern) Drugg(ist), 4-50, 1882-1928.

Y(ea)rb(oo)k of A(merican) Ph(armaceutical) A(ssociation), 1-21, 1912-1932.

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Cartheuser, J. F. - Fundamenta Materia Medicae, 1749

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Emmart, E. W. - The Badianus Manuscript, 1940

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Maisch, J. M. - Organic Materia Medica V. 1-2& 4, 1895

Marme', W. - Lehrbuch Der Pharmacognosie Des Pflanzen- und Thierreichs, 1886

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Messue J. - Opera Divi, 1541

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Neill, J. & Smith F. G - A Handbook of Materia Medica & Therapeutics, 1848

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UNITED STATES PHARMACOPOEIA

(O-XI) (1820-1930)

and

NATIONAL FORMULARY

(I-VI) (1888-1935)

# HISTORY

of

# BENZOIN

U.S.P. 1820 P.p.30

Benzoinum. Styrax Benzoin W.11.623

Benzoin. Balsamum. The balsam.

U.S.P. 1830 (N. Y.) P. p. 22

Benzoinum. Styrax Benzoin

Benzoin.

Prop. In brittle masses made up of white and yellowish brown frag / ments; odour fragrant; taste scarcely perceptible; soluble in alcohol / and ether.

Med. Oper. Stimulant, expectorant; rarely, however used. Principally employed in preparation of Benzoic acid, which, when / heated, it exhales in large quantities.

U.S.P. 1830 (Phil.) P.p. 6

Benzoinum Styrax benzoin W.ii 623

Benzoin Succus Concretus.

The Concrete juice

U.S.P. 1840 P.p. 15

Benzoinum. Benzoin

The concrete juice of Styrax Benzoin.

U.S.P. 1850 P.p.16

Benzoinum. Benzoin

The concrete juice of Styrax Benzoin.

U.S.P. 1860 P.p. 19

Benzoinum. Benzoin

The concrete juice of Styrax Benzoin.

U.S.P. P.p. 20

Benzoinum. Benzoin

A solid balsam obtained from Styrax Benzoin.

U.S.P. 1880 p. 54

Benzoinum

Benzoin

A balsamic resin obtained from Styrax Benzoin Dryander (Nat. Ord., / Styraceae).

In lumps consisting of agglutinated, yellowish-brown tears, which are internally / milk-white, or in the form of a reddish-brown mass, more or less mottled from / whitish tears imbedded in it. It is almost wholly soluble in 5 parts of moderately warm alcohol, and in solution of potassa. When heated, it gives off fumes of / benzoic acid. It has a slight, aromatic taste, and an agreeable, balsamic odor.

When Benzoin is boiled with milk of lime, the hot filtrate should not give off the / odor of oil of bitter almond on the addition of test-solution of permanganate of potassium (abs. of cinnamic acid).

Preparations: Adeps Benzoinatus. Tinctura Benzoini. Tinctura Benzoini Composita.

U.S.P. 1890 p. 64

Benzoinum

Benzoin

A balsamic resin obtained from Styrax Benzoin Dryander (Nat. Ord., Styraceae).

In lumps consisting of agglutinated, yellowish-brown tears, which are internally milk-white, or in the form of a reddish-brown mass, more or less mottled / from whitish tears embedded in it. It is almost wholly soluble in 5 parts of / moderately warm alcohol, and in solutions of the fixed alkalies. When heated, it gives off fumes of benzoic acid. It has an agreeable, balsamic odor, and a / slight, aromatic taste.

Preparations: Adeps Benzoinatus. Tinctura Benzoini. Tinctura Benzoini / Composita.

U.S.P. 1900 p. 70

Benzoinum

Benzoin

A balsamic resin obtained from Styrax Benzoin Dryander, and / another unidentified species of Styrax (Fam. Styraceae).

In pebble-like bodies or tears, mostly 0.5 to 5 cm. long and about one-fourth / as thick, slightly flattened, straight or curved, yellowish- to rusty-brown exter / nally, milky white on fresh fracture, separate or very slightly agglutinated / (Siam Benzoin), or embedded in a dry resinous mass, which varies from reddish / -brown to reddish-gray or grayish-brown; opaque or slightly translucent and / more or less lustrous (Sumatra Benzoin); brittle, becoming soft on warming, / and yielding benzoic acid on sublimation; odor agreeable, balsamic (vanilla / like in Siam variety); taste slightly acrid.

Benzoin is almost wholly soluble in 5 parts of warm alcohol, the solution / showing an acid reaction to blue litmus paper; soluble in solutions of sodium / or potassium hydroxide. It should not, on incineration, yield more than 2 / percent of ash. Average dose - 1 Gm. (15 grains).

U.S.P. 1910 p. 75

Benzoinum

Benzoin

A balsamic resin obtained from Styrax Benzoin Dryander and some / other species of Styrax (Fam. Styracaceae) growing in the East Indies / and known in Commerce as Sumatra Benzoin and Siam Benzoin.

Sumatra Benzoin - In blocks or lumps of varying size, made up of tears, / compacted together with a reddish-brown, reddish-gray, or grayish-brown / resinous mass; tears externally yellowish or rusty-brown, milky-white on fresh / fracture; hard and brittle at ordinary temperatures, but softened by heat and / becoming gritty on chewing; odor aromatic and upon digesting with boiling/ water suggesting the odor of cinnamic acid or storax; taste aromatic and slightly / acrid.

Heat a few fragments of Sumatra Benzoin in a test tube; a sublimate is formed / consisting of plates and small, rod-like crystals that strongly polarize light.

Add carefully an ethereal solution of Sumatra Benzoin to a small quantity of / sulphuric acid contained in a porcelain dish; the solution is colored a brownish- / red. Not less than 75 per cent of Sumatra Benzoin dissolves in alcohol; the/ alcoholic solution, upon the addition of water, becomes milky and is acid to / litmus.

Sumatra Benzoin does not yield more than 2.5 per cent of ash.

Siam Benzoin - In pebble-like tears (rosin and foreign resins).

Treat about 1 Gm. of powdered Benzoin

with 15 mils of warm carbon di / sulphide, filter the solution, wash the filter with an additional 5 mils of carbon / disulphide and allow the mixed liquids to evaporate spontaneously; not less / than 12.5 per cent of residue remains, which corresponds to the tests for identity / under acidum Benzoicum.

Preparations: Adeps Benzoinatus Tinctura Benzoini
Tinctura Benzoini / Composita.

Average Dose - Metric, 1 Gm.--Apothecaries, 15 grains.

U.S.P. 1920 p. 77

Benzoinum

Benzoin

Benzoin

Benzoin is the balsamic resin obtained from Styrax Benzoin Dry / ander, known in commerce as Sumatra Benzoin or from other species / of Styras, known in commerce as Siam Benzoin (Fam. Styraceae).

Sumatra Benzoin yields not less than 75 per cent of alcohol-soluble / extractive and not more than 1 per cent of acid-insoluble ash. Siam / Benzoin contains not more than 1 per cent of foreign organic matter, yields not less than 90 per cent of alcohol-soluble extractive, and / not

more than o.5 per cent of acid-insoluble ash.

Description and physical properites.

Unground Sumatra Benzoin-Blocks or lumps of varying size, made up of tears, / compacted together with a reddish-brown, reddish gray, or grayish-brown / resinous mass; tears externally yellowish or rusty-brown, milky-white on / fresh fracture; hard and brittle at ordinary temperatures, but softened by / heat and becoming gritty on chewing; odor aromatic. When digested with / boiling water the odor suggests cinnamic acid or storax; taste aromatic and slightly acrid.

Unground Siam Benzoin-Pebble-like tears of variable size, compressed, yellow / ish-brown to rusty brown externally, milky-white on fracture, separate or very / slightly agglutinated, hard and brittle at ordinary temperatures but softened / by heat and becoming plastic on chewing; odor aggreeable, balsamic, vanilla / -like; taste aromatic and slightly acrid.

Tests for identity--The solution of Benzoin in alcohol becomes milky upon the / addition of water and is acid to litmus paper.

Heat a few fragments of Benzoin in a test tube: Sumatra Benzoin evolves / a sublimate consisting of plates and small, rod-like crystals that strongly / polarize light.

Treat about 0.25 Gm. of Benzoin with 5cc. of ether, decant about 1cc. of the / ethereal solution into a porcelain dish, and add to it 2 or 3 drops of sulfuric / acid: the solution of Sumatra Benzoin produces a deep red-brown coloration / of the sulphuric acid and the solution of Siam Benzoin produces a deep / purplish-red coloration.

Heat about 0.5 Gm. of Benzoin in a test tube with 10cc. of potassium / permanganate T.S.: only the Sumatra variety develops an odor of benzalde / hyde.

Treat about 1 Gm. of powdered Benzoin with 15cc. of warm carbon disulphide, and allow the filtrate to evaporate spontaneously: The residue does not exceed 12.5 per cent. This residue responds to the tests for identity under Acidum / Benzoicum.

Test for purity--Benzoin does not show the presence of rosin, page 457.

Assay--Proceed as directed under alcohol-soluble extractive (page 466).

Preparations--Adeps Benzoinatus, Tinctura Benzoini, Tinctura Benzoini Com- / posita.

Average Dose--Metric, 1 Gm.--Apothecaries, 15 grains.

U.S. P. 1930-- p. 85

Benzoinum

Benzoin

Benzoin.

Benzoin is the balsamic resin obtained from Styrax Benzoin Dryander, / known in commerce as Sumatra Benzoin, or from Styrax tonkinensis / (Pierre) Craib et Hartwich, or other species of Styrax, known in Commerce as Siam Benzoin (Fam. Styraceae).

Sumatra Benzoin yields not less than 75 per cent of alcohol-soluble / extractive ,page 475, and not more than 1 per cent of acid-insoluble ash, / page 473. Siam Benzoin contains not more than 1 per cent of foreign / organic matter, page 472, yields not less than 90 per cent of alcohol- / soluble extractive, page 475,

and not more than 0.5 per cent of acid- / insoluble ash, page 473.

Description and physical properties--

Unground Sumatra Benzoin--Blocks or lumps of varying size, made up of tears, / compacted together with a reddish-brown, reddish-gray, or grayish-brown / resinous mass; tears externally yellowish or rusty-brown, milky-white on / fresh fracture; hard and brittle at ordinary temperatures, but softened by / heat and becoming gritty on chewing; odor aromatic. When digested with / boiling water, the odor suggests cinnamates or storax; taste aromatic and slightly acrid.

Unground Siam Benzoin--Pebble-like tears of variable size, compressed, yellowish-brown to rusty-brown externally, milky-white on fracture, separate or very slightly agglutinated, hard and brittle at ordinary temperatures but softened / by heat and becoming plastic on chewing; odor agreeable, balsamic,

vanilla-like; taste aromatic and slightly acrid.

Tests for identity--The solution of Benzoin in alcohol becomes milky upon the addition of water and is acid to litmus paper.

Heat a few fragments of Benzoin in a test tube: Sumatra Benzoin evolves / a sublimate consisting of plates and small, rod-like crystals that strongly / polarize light. Siam Benzoin evolves a sublimate directly above the melted / mass consisting of numerous long, rod-shaped crystals, which do not strongly polarize light.

Treat about 0.25 Gm. of Benzoin with 5cc of ether, decant about 1cc / of the ethereal solution into a porcelain dish, and add to it 2 or 3 drops of / sulfuric acid: The solution of Sumatra Benzoin produces a deep red-brown / coloration of the sulfuric acid and the solution of Siam Benzoin

produces / a deep purplish-red coloration.

Heat about 0.5 Gm. of Benzoin in a test tube with 10cc of potassium / permanganate T.S.: only the Sumatra variety develops a strong odor of benzaldehyde.

Treat about 1 Gm. of powdered Benzoin with 15cc of warm carbon disulfide, filter, wash the filter with an additional 5cc. of carbon disulfide, / and allow the filtrate to evaporate spontaneously: the residue is not less / than 12.5 per cent. This residue responds to the tests for identity under / Acidum Benzoicum, page 16.

Tests for purity--Benzoin does not show the presence of rosin, using xylene as the / solvent, page 465.

Assay--Place about 2 Gm. of Benzoin, accurately weighed, in a tared extraction thimble and about 0.1 Gm. of sodium hydroxide in the receiving flask of / the extraction apparatus and extract with alcohol in a Soxhlet apparatus or / other

suitable extraction apparatus for five hours, or until completely extracted. Dry the insoluble residue at 100° C for thirty minutes and weigh./ Determine the amount of moisture in the drug by the toluene distillation / method, page 473, calculate the weight of moisture in the benzoin and sub / tract this weight of moisture from the original weight of the Benzoin taken / for the assay. The difference between this result and the weight of the residue / determined above represents the alcohol-soluble extractive.

Preparations--Adeps Benzoinatus, Tinctura Benzoini, Tinctura Benzoini Composita.

SUMMARY OF U.S.P. DATA ON BENZOIN

Where and When Official:-

U.S.P. - 1820; '30 (NY); '30 (Phil); '40; '50; '60; '70; '80; '90; 1900; '10; '20; '30:

Official Latin Title:-

Benzoinum - U.S.P. 1820, '30 (NY); '30 (Phil); '40; '50; '60; '70; '80; '90; 1900; '10; '20:

Official English Title:-

Benzoin - U.S.P. - 1820; '30 (NY); '30 (Phil); '40; '50; '60; '70; '80; '90; 1900; '10; '20; '30:

Official Abreviation:-

Benzoin - U.S.P. - 1910; '20; '30:

Official Synonym:-

Gum Benjamin U.S.P. 1910:

Parts Used:-

The Balsam - U.S.P. - 1820

U.S.P. - 1830 (NY)

The Concrete Juice - U.S.P. - 1830 (Phil);

'40; '50; '60.

A Solid Balsam - U.S.P. - 1870

A Balsamic Resin - U.S.P. -1880; '90; 1900;
'10; '20; '30.

Scientific Name:-

Styrax Benzoin U.S.P. - 1820; '30 (NY); '30 (Phil);
'40; '50; '60; '70; '80;
'90.

Styrax Benzoin, and Another Species of Styrax
Unidentified U.S.P. 1900; '10; '20.

Styrax Benzoin,
Styrax tonkinensis or
Other species of Styrax U.S.P. 1930

Family:-

Styraceae U.S.P. 1880; '90; 1900; '10; '20; '30.

Official Description:-

U.S.P. 1830 (NY); '80; '90; 1900; '10; '20; '30.

Official Preparations:-

U.S.P. Adeps Benzoinatus
Tinctura Benzoini
Tinctura Benzoini Composita U.S.P. 1880,

'90, -- 1910, '20, '30.

Official Dose:-

1Gm. (15 grains) U.S.P. 1900; '10; '20,

Approved W. O. Richtmann

Dean of Pharmacognosy