

BIBLIOGRAPHY OF COPAIBA

By

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Maregrave, G.

1648.

(Copaiba).

Nat. Hist. Brasil, p. _____. (U.S. Dispens., 3 ed., p. 250; ibid., 5 ed., p. 270; ibid., 10 ed., p. 286; ibid., 12 ed., p. 322; ibid., 13 ed., p. 332; ibid., 14 ed., p. 346; ibid., 15 ed., p. 489; ibid., 17 ed., p. 445; ibid., 19 ed., p. 397; ibid., 20 ed., p. 380; Select. Stirp. Americanum, p. 133.)

The original was not available.

Maregrave, G.

1648.

(Copaiba).

Historia rerum naturalium Brafiliae, p. 130. (Linne Species Plantarum, 4 ed., v. 2, pt. 1, p. 630.)

The original was not available.

Piso, W.

1648.

(Copaiba).

Nat. Hist. Brasil., p. _____. U.S. Dispens., 3 ed., p. 250; ibid., 5 ed., p. 270; ibid., 10 ed., p. 286; ibid., 12 ed., p. 322; ibid., 13 ed., p. 332; ibid., 14 ed., p. 346; ibid., 15 ed., p. 489; ibid., 17 ed., p. 445; ibid., 19 ed., p. 397; ibid., 20 ed., p. 380; Select. Stirp. Americanum, p. 133; Linnes Species Plantarum, 4 ed., pt. 1, p. 630.)

The original was not available.

Piso, W.

1658.

Copaiba.

Indiae Utrius. Res. Nat. etc. Medica, p. 118.

Gives a description of the copaiba plant growing in the W. Indies and Brazil along with a print of a flowering branch.

Ray, J.

1687.

(Copaiba)

Historia plantarum, p. 1593; (Linne, Species Plantarum, 4 ed., v. 2, pt. 1, p. 630.)

The original was not available.

Jacquin, N.J.

1763.

Copaiba.

Select. Stirp. Americanum, p. 133; U.S. Dispens., 2 ed., p. 260; *ibid.*, 3 ed., p. 250; *ibid.*, 5 ed., p. 270; *ibid.*, 10 ed., p. 286; *ibid.*, 12 ed., p. 322; *ibid.*, 13 ed., p. 332; *ibid.*, 14 ed., p. 346; *ibid.*, 15 ed., p. 489; *ibid.*, 17 ed., p. 445; *ibid.*, 19 ed., p. 397; *ibid.*, 20 ed., p. 380; Linne's Species Plantarum, 4 ed., pt. 1, p. 630.

Gives both a technical and popular description of the plant and an account of Copaiba.

Miller, P.

1769.

(Copaiba).

Gardner's Dictionary, 8 ed., p. ___; (Linne's Species Plantarum, 4 ed., v. 2, pt. 1, p. 630.)

The original was not available.

Linne, C.

1772.

Copaifera Officinalis.

Mat. Med., 115; (Linne's Species Plantarum, 4 ed., v. 2, pt. 1, p. 630.)

Gives properties and uses of Copaiba.

Houttuyn, M.

1777.

(Copaiba).

Houttuyn Lin. Pfl. Sypt. v. 1, p. 638, t. 10, f. 1.
(Linne's Species Plantarum, 4 ed., v. 2, pt. 1, p. 630.)

The original was not available.

Willdenow, C.L.

1799.

Copaifera Officinalis.

Linne, *Species Plantarum* 4 ed., v. 2, pt. 1, p. 630.

Gives a brief technical description of the plant, with 4 synonyms and 7 references.

Coxe, J.R.

1806.

Copaifera Officinalis.

Am. Dispens., 11 ed., p. 288; *ibid.*, 4 ed., p. 195; *ibid.*, 7 ed., p. 129.

Gives Latin title, common name, natural order, habitat, physical and chemical properties, medical use and dose of *Copaiba*.

Thatcher, J.

1813.

Copaifera Officinalis.

Am. New Dispens., 2 ed., p. 198; *ibid.*, 4 ed., p. 198.

Gives common name, habitat, description, properties and uses of *Copaiba*.

Woodville, W.

1810.

Copaifera Officinalis.

Medical Botany, 2 ed., v. 3, p. 609 t. 216. *U.S. Dispens.*, 2 ed., p. 260; *ibid.*, 3 ed., p. 250; *ibid.*, 5 ed., p. 270; *ibid.*, 10 ed., p. 286; *ibid.*, 12 ed., p. 322; *ibid.*, 13 ed., p. 332; *ibid.*, 14 ed., p. 346; *Eclectic Dispens.*, 1 ed., p. 154.)

Gives synonyms, source, descriptions, properties and uses of *Copaiba*.

Mitchell, S.L. & Seaman, V.

1816.

Copaifera Officinalis.

Pharmacopoeia New York Hospital, 1816, p. 17.

Defines *Copaiba*.

Desfontaines, __. 1821.

(Copaiba)

Mein. Mus. de Hist. Nat., 7, p. 377. (Med. Plants, 2, p. 93; Natl. Dispens., 2 ed., p. 459; *ibid.*, 3 ed., p. 503; *ibid.*, 5 ed., p. 536.)

Gives description, habitat, other species, official parts, names, method of extracting, collection, general characters, varieties, composition, adulterant and substances, medicinal properties and uses.

Pierquins, __. 1824.

(Copaiba).

Memorial Pharmaceutique, v. 1, p. __. (Am. Jour. Pharm., 35 v., p. 14.)

(Suggests a method of obtaining a good mass of Copaiba with use of soap.)

Godefroy, __. 1825.

Sur la mixture bresilienne de M. Lepere, et resultat de quelques essais sur le baume de copher.

Jour. de pharm., 17, p. 291; (Am. Jour. Pharm., 35, p. 15.)

Gives a number of preparations containing copaiba used in investigating its use.

Lepere, __. 1825.

Sur la mixture bresilienne.

La Gaz. de Saute, __, p. __. (Jour. de Pharm., 17, p. 291.)

(Gives formulas for bresilienne mixture liquid and paste.)

Physician, An Am. 1827.

Copaifera.

Eclac. Dispens., 1 ed., p. 154.

Gives the official Latin title, national order, botan-

ical description, species, synonym, habitat, properties, medical properties and uses and dose of Copaiba.

Hayne, F.G.

1827.

Copaifera Jacquini.

Darstel. u. Beschreib. der Arzneig., v. 10, p. 14. (U.S. Dispens., 2 ed., p. 260; *ibid.*, 3 ed., p. 250; *ibid.*, 5 ed. p. 270; *ibid.*, 10 ed., p. 286; *ibid.*, 12 ed., p. 322; *ibid.* 13 ed., p. 332; *ibid.*, 14 ed., p. 346; *ibid.*, 15 ed., p. 490; *ibid.*, 17 ed., p. 445; *ibid.*, 19 ed., p. 398.)

Gives a description of the plant, synonyms and uses of the commercial article. Also gives the same for ten other species of *Copaifera*; viz. *Guianensis*, *Martii* *Bijuga*, *Nitida*, *Laxa*, *Taugsdorffii*, *Coriacea*, *Cordifolia*, *Sellowie*, and *Oblongifolia*.

Durand, E.

1828.

Copaiba.

Am. Journ. Pharm., 1, p. 3; (U.S. Dispens., 2 ed., p. 261; *ibid.*, 3 ed., p. 251; *ibid.*, 5 ed., p. 271; *ibid.*, 10 ed., p. 287; *ibid.*, 14 ed., p. 347; *ibid.*, 15 ed., p. 490.)

Gives habit, chemical and physical properties, constituents, uses and various methods of administration of *Copaiba*.

Miacle, __.

1828.

Copaiba.

Journ. de chim. med., 4, p. 145. (*Am. Jour. Pharm.*, 35, p. 15.)

Method of solidifying balsam *copaiba* with magnesia, to render it useful for making into pills is discussed.

Adler, F.E.

1829.

D'extraire l'huile volatile de *copaiba*, et de sponifier la resine en meme temps.

Jour. de Pharm., 21, p. 95. (*Am. Journ. of Pharm.*, 1, p. 117.)

A new process for extracting the volatile oil of Copaiba and for saponifying the resin at the same time is given with suggestions as to procedure.

Batka, F.

1829.

Baume de Copahu.

Archio. Generales de Mid., 21, p. 502.

States that any sample contaminated with a fixed oil is easily saponified with an alcoholic solution of potassium but a pure sample is not affected.

Caventon, __.

1829.

Copahu.

Archio. Generales de Med., 19, p. 464.

States that upon distilling four liters of Copaiba, he obtained twenty eight ounces of essential oil.

Chevallier, __.

1829.

Baume de Copahu.

Journ. de chim. Med., 5, p. 618; (Am. Journ. Pharm., 2, p. 84.)

Describes a method of detecting fixed oil in pure Copaiba.

Guibourt, __.

1829.

Baume de Copahu.

Archio. Generales de Med., 21, p. 502.

States that Copaiba is readily soluble in alcohol, and affording a hard resin by boiling in water, was easily solidified with magnesia, but, if it remained soft after boiling and did not entirely dissolve in alcohol, it was a proof that it contained some fat oil, which prevented its solidification.

Lecanu, __., Blondeau, __. & Guibourt, __. 1831.
• Rapport.

Journ. de pharm., 23, p. 106. (Am. Jour. Pharm., 3, p. 39.)

In the report, means by which balsam copaiba can be solidified by calcined magnesia are given.

Avoke, J. 1833.

Test for Balsam Copaiba.

Am. Jour. Pharm., 5, p. 33.

New tests for balsam Copaiba are; 1, perfect solubility in Spirit of Nitrous Ether and 2, capability of solidifying with magnesia.

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

Copaiba, U.S.

U.S. Dispens., 2 ed., p. 259; *ibid.*, 3 ed., p. 250; *ibid.*, 5 ed., p. 270; *ibid.*, 10 ed., p. 286; *ibid.*, 12 ed., p. 322; *ibid.*, 13 ed., p. 331; *ibid.*, 14 ed., p. 345; *ibid.*, 15 ed., p. 493; *ibid.*, 17 ed., p. 444; *ibid.*, 19 ed., p. 397; *ibid.*, 20 ed., p. 380; *ibid.*, 21 ed., p. 379.

Gives Latin names, English name, synonyms, foreign titles, botanical description of the plant, habitat, properties, medical properties, uses and dose of copaiba.

Webster, __. 1835.

(Balsam Copaiba)

Voyage to South Atlantic, v. 2, p. __; (Am. Jour. Pharm., 7, p. 173.)

(A short review of use of copaiba as a vermifuge, and as a mixture with paint. Describes seeds and gives uses and constituents.

Monchon, E. & Puche, __. (1837-8)

(Formulas for Syrups of Copaiba).

Journ. des Connaiss. Med., p. __. (Am. Jour. Pharm., 11, p. 264.)

(Gives formulas for various syrups of Copaiba.)

Fehling, M.

1841.

Investigations Concerning a Resin Extracted from Balsam of Copaiba.

Am. Jour. Pharm., 15, p. 36. (King's Am. Dispens., 18 ed., V.1, p. 600; Natl. Dispens., 2 ed., p. 461; *ibid.*, 3 ed., p. 505; *ibid.*, 5 ed., p. 538.)

Examined a slightly crystalline deposit formed in balsam of copaiba of good quality. Determined composition in hydrated and anhydrous states. Resin found to be isomeric with oxysyloic acid of Hess.

O'Shaughnessy, __.

1842.

(Copaiba Wood Oil).

Bengal Dispens., p. 311. (U.S. Dispens., 12 ed., p. 325; *ibid.*, 13 ed., p. 335; *ibid.*, 14 ed., p. 348.)

Gives botanical source, properties of balsam of Copaiba, the volatile oil and resin of Copaiba, effects and uses.

Thierrys, __.

1842.

De la solidification du baume de copahu et la tire-benthim.

Jour. de pharm., 34, p. 310. (Am. Jour. Pharm., 35, p. 15.)

Comments on various agents and methods used for the solidification of Copaiba.

Bele, J.

1843.

On Some Preparations of Balsam of Copaiva.

Pharm. Journ., 3, p. 66.

Method for solidifying Copaiba is given; prepara-

tions consisting of volatile oil and resins alone with other ingredients is given. Also a preparation of copaivate of iron.

Geiseler, __. 1844.

Balsam Copaivae.

Arch. der Pharm., 88, p. 157.

Comments on Simons test for the purity of Copaiba using Ammonia, stating that it is not useful, and that the only way to analyze it for individual constituents.

Simon, J.E. 1844.

Balsam Copaivae.

Arch. der Phar., 88, p. 156; Am. Jour. Pharm., 16, p. 236; King's Am. Dispens., 6 ed., p. 345; *ibid.*, 8 ed., p. 292; *ibid.*, 10 ed., p. 292; U.S. Dispens., 10 ed., p. 289; *ibid.*, 12 ed., p. 234; *ibid.*, 13 ed., p. 334; *ibid.*, 14 ed., p. 348; *ibid.*, 15 ed., p. 492; *ibid.*, 17 ed., p. 447.)

Tests for the identification and purity of Copaiba are given.

Oberdoffer, __. (1846)

(On Examination of Balsam of Copaiba).

Chem. from Journ. de pharm. et de chim., p. __. (Am. Journ. Pharm., 18 v., p. 302.)

Gives different commercial kinds, adulterations, constituents and amount of new and old balsam Copaiba, also discusses difficulty encountered when trying to dissolve it in alcohol.

Redwood, I. 1847.

Note on the Tests of the Purity of Balsam of Copaiba.

Am. Jour. Pharm., 19, p. 187; (U.S. Dispens., 16 ed., p. 325; *ibid.*, 13 ed., p. 334; *ibid.*, 14 ed., p. 348; 15 ed., p. 492; *ibid.*, 17 ed., p. 447; *ibid.*, 19 ed., p. 400).

Believes the theory in satisfactory method of testing purity Copaiba, applicable in all cases. Gives reasons for thinking so by proof of tests - used 3 different samples in tests and got different results.

Taidley, J. 1850.

Pills of Copaiba.

Am. Journ. Pharm., 22, p. 121.

Results of a few experiments to determine the conditions necessary for obtaining of good pilular names.

Mitscherlich, C.G. 1850.

On Oil of Copaiba.

Pharm. Journ., 8, p. 233; (Am. Jour. Pharm., 22, p. 68.)

Experiments with oil show that in its effects it is very similar to, but much milder than, those of the oils of lemon and turpentine. Cites differences and similarities. Found the oil to be a feeble poison.

Procter, W. Jr. 1850.

Observations on Copaiba.

Am. Jour. Pharm., 22, p. 289; (U.S. Dispens., 10 ed., p. 287; *ibid.*, 12 ed., p. 323; *ibid.*, 13 ed., p. 333; *ibid.*, 15 ed., p. 346; *ibid.*, 15 ed., p. 490; *ibid.*, 17 ed., p. 445; *ibid.*, 19 ed., p. 398; *ibid.*, 20 ed., p. 381.)

Gives proximate constituents of Copaiba, proportional relation of those in the Copaibas of commerce, the causes existing and action, before and after the juice is extracted, which modify the quantitative relation of its constituents and conclusions.

Neligan, J.M. 1851.

Copaiba, L.E.

Med., Uses & Administ. 3 ed., p. 430.

Gives species, physical and chemical properties, doses and methods of administration of Copaiba.

Guibourt, N.J. B.G.

1852.

Experiences sur differentes sortes de Copahu.

Jour. de Pharm. et Chemie, 55, p. 321; (Am. Jour. Pharm., 25, p. 132.)

A description of different kinds of commercial Copaiba is given.

Lowe, C.

1854.

New Variety of Balsam of Copaiba.

Pharm. Jour., 14, p. 65; (U.S. Dispens., 12 ed., p. 325; ibid., 13 ed., p. 334; ibid., 14 ed., p. 348; Am. Journ. Pharm., 26, p. 539.)

The new product was found to be a balsam of Copaiba but differing in its properties from ether balsam. The essential oil in the new variety was found to be exactly like that of the few Copaiba. Resin in new was found to be different however.

Pereira, J.

1854.

Copaifera Multijuga.

Elements of Materia Med., 2, p. 853.

Gives history, botany, species, method of extraction, balsam, constants, adulterants, physiological effects, uses and preparation of Copaiba.

Hanbury, D.

1856.

On Wood Oil, a Substitute for Copaiba.

Pharm. Jour., 15, p. 321; (Am. Jour. Pharm., 28, p. 159; U.S. Dispens., 12 ed., p. 325; ibid., 13 ed., p. 334; ibid. 14 ed., p. 348.)

Wood oil or Gurjun Balsam resembles very closely Balsam of Copaiba. The medicinal properties of both are practically equally efficient. Pure Copaiba is often adulterated with Wood Oil.

DeVry, J.E.

1857.

Note on Wood Oil.

Pharm. Jour., 16, p. 374. (U.S. Dispens., 12 ed., p. 325; ibid., 13 ed., p. 335; ibid., 14 ed., p. 348.)

States that the admixture of wood oil with Copaiba balsam can be detected by an equal volume of benzol, and by the stronger rotation of the essential oil of wood oil, and by the fact that this rotation is changed from left to right, if the essential oil is treated with hydrochloric acid gas and afterwards rectified with water.

Landerer, X.

1859.

Mittel zur Verbesserung des Geschmacks des Copaiva-Balsams.

Buckner's neues Report. f. Pharm., 8, p. 517. (Proc. Am. Pharm. Assoc., 9, p. 103).

Tells how to improve the taste of Copaiva.

Ricord, __.

1861.

Tar and Copaiba Capsules.

Pharm. Journ., 20, p. 535. (Drugg. Circ., 5, p. 219; Proc. Am. Pharm. Assoc., 10, p. 103.)

A combination of tar and copaiba used for treatment of gonorrhoea. He also combined Copaiba with pepsine and bismuth to prevent the drastic effects of the balsam.

Beyran, __.

1862.

Formule de Copahu sans Odeur et Sans Laveur.

Repert de pharm., 18, p. 272. (Proc. Am. Pharm. Assoc., 10, p. 81.)

Method of rendering Copaiba free from disagreeable odor is given.

Maisch, J.M.

1862.

On Copaiba Pills.

Am. Journ. Pharm., 35, p. 13; (Drugg. Circ., 7, p. 22).

Gives method of administering Copaiba in old way and shows how methods of administering in form of pills is superior; method of obtaining good pill mass, list of ingredients and method of manufacture, uses of Copaiba pills.

Reveil, __.

1862.

Falsification Du Baume de Copahu.

Jour. de Chemie med. de Pharm. et de Toxicol., 8, p. 153; (Repert. de Pharm., 18, p. 448; Proc. Am. Pharm. Assoc., 10, p. 104.)

States that Copaiba has been adulterated with turpentine.

Quern, E.

1863.

Copaiba Capsules.

Am. Journ. Pharm., 36, p. 9.

Gives method of preparation of Copaiba capsules and method of manufacture of the gelatin capsules.

Tridore, __.

1863.

Du Copahu et du Styrax comme Speci figures du Croup et De La Diphtherite.

Rep. de pharm., 19, p. 382; (Am. Journ. Pharm., 35, p. 278; Proc. Am. Pharm., Assoc., 11, p. 83; Drugg. Circ., 7, p. 107.)

Comments on Copaiba and Storax as specifies in croup and diphtherites.

King, J.

1864.

Copaifera Officinalis (Cofaivabaum).

Am. Dispens., 6 ed., p. 343; *ibid.*, 8 ed., 291; *ibid.*, 10 ed., p. 291.

Gives description, history, properties and uses and official preparations of Copaiba.

Maisch, J.M. 1864.

Adulteration of Copaiba.

Am. Jour. Pharm., 36, p. 101; (U.S. Dispens., 15 ed., p. 492.)

Gives method of detection in the adulteration of Copaiba.

Hager, H. 1865.

Ueber die Solification des Copaiva-balsams durch die Erduer.

Pharm. Centrbl., 6, p. 178. (Proc. Am. Pharm. Assoc., 14, p. 192; Pharm. Jour. 30, p. 425; New Rem., 12, p. 136.)

Describes a method of solidifying Copaiba balsams.

Rabot, __. 1866.

(Balsam of Copaiba).

Pharm. Austr., __, p. 79. (Proc. Am. Pharm. Assoc., 14, p. 154.)

A method of solidifying balsam of copaiba for the manufacture of pills is given.

Flueckiger, F.A. 1867.

Bemerkung ueber Copaiva balsam.

N. Jahrb. f. Pharm., 28, p. 129; (Proc. Am. Pharm. Assoc., 16, p. 182.)

Describes a method of obtaining copaivic acid from copaiba.

Strauss, E.G. 1868.

Ueber einige Bestandtheile des Copaivabalsam.

Annal. der Chem. & Pharm. 148, p. 148. (Proc. Am. Pharm. Assoc., 17, p. 184; U.S. Dispens., 17 ed., p. 446; *ibid.*, 19 ed., p. 399; *ibid.*, 20 ed., p. 381; *ibid.*, 21 ed., p. 381.)

Reports the results of an examination of the volatile oil of Copaiba balsam.

Walle, Van de, D. 1868.

(Copahu Gelatini forme)

Bull. Soc. Pharm., Bruxelles, __, p. __; (Drugg. Circ., 12, p. 319.)

Gives a method to form a Copaiba jelly.

Garrod, A.B. 1869.

Essentials of Mat. Med. & Therap., __, p. __.

The original was not available.

Bedford, P.W., Chairman 1872.

Balsam Copaiba.

Proc. Am. Pharm. Assoc., 20, p. 119.

Gives market price of Copaiba and also where shipped from.

Fumocize, A. 1873.

(Remarks on Balsam of Copaiba Tested Copaiba).

Am. Jour. Syphulography, 4, p. __; (Drugg. Circ., 17, p. 44)

Cites use of Copaiba in treatment of gonorrhoea. Also states that only tested Copaiba should be used, being 55% resin and 45% essential oil.

Gerrard, A.W. 1873.

Note on the Exhibition of Resin of Copaiba.

Pharm. Jour., 33, p. 63.

The resin is said to possess therapeutic advantages over the balsam and is more agreeable for the patient to take.

Polk, C.G.

1873.

Emulsion of Copaiba.

Drugg. Circ., 17, p. 56.

Gives a formula with directions for making an emulsion of Copaiba.

Wayne, S.S.

1873.

(Adulterations of Copaiba with Castor Oil).

Cincinnati Lancet, __, p. __; (Am. Journ., v. 45, p. 326; U.S. Dispens., 14 ed., p. 349; *ibid.*, 15 ed., p. __; *ibid.*, 17 ed., p. 447; *ibid.*, 19 ed., p. 400; *ibid.*, 20 ed., p. 383; Proc. Am. Pharm. Assoc., 21, p. 477; *ibid.*, 22, p. 153.)

Comments on samples of Copaiba found to be adulterated with Castor Oil and tells how the adulterant may be detected.

Wilks, __.

1873.

Clinical Remarks on the Resinae Copaibae as a Diuretic.

Lancet, 1873, p. 410. (U.S. Dispens., 14 ed., p. 349; *ibid.*, 15 ed., p. 493; *ibid.*, 17 ed., p. 448; *ibid.*, 19 ed., p. 401; *ibid.*, 20 ed., p. 383; Drugg. Circ., 17, p. 125.)

States that resin of Copaiba has been found to be very valuable as a diuretic and wishes that it were included in the pharmacopoeia.

Taylor, F.

1876.

Diuretic Action of the Resin of Copaiba.

Guy's Hospital Reports 21, p. ; (Drugg. Circ., 21, p. 100.)

Tells of forty cases in which Copaiba was administered as a diuretic.

Baillon, H. 1877.

E'tude sur les Copaiifera.

Journ. de pharm. et de chimie, 104, p. 251; (Pharm. Jour., 36, p. 873; Proc. Am. Pharm. Assoc., 25, p. 214.)

Gives principle botanical sources of various Copaibas.

Bowman, C.A. 1877.

Examination of Commercial Copaiba.

Inaugural Essay - Philadelphia College of Pharmacy; (Am. Journ. Pharm., 49, p. 385; Proc. Am. Pharm. Assoc., 26, p. 287).

Gives physical and chemical properties of two kinds of Copaiba-Para and Maracaibo as both behave differently; tests with various acids, oxidizing agents and solvents.

Futton, J. 1877.

Copaiba.

Am. Jour. Pharm., 49, p. 550; (Proc. Am. Pharm. Assoc., 26, p. 288; U.S. Dispens., 15 ed., p. 492.)

The examination of seven commercial specimens of Copaiba is reported.

Glynn, __. 1877.

Copaiba Resin in a Case of Ascites.

Lancet, 1877, v. 2, p. 49. (Drugg. Circ., 22, p. 42.)

Cites a case of ascites which had been tapped on five occasions as having been cured by Copaiba resin.

Maisch, J.M. 1877.

Note on the Detection of Castor Oil in Copaiba.

Am. Journ. Pharm. 49, p. 131; (U.S. Dispens., 17 ed., p. 447; *ibid.*, 19 ed., p. 400; *ibid.*, 20 ed., p. 383; King's Am. Dispens., 18 ed., v. 1, p. 601; Proc. Am. Pharm. Assoc., 25, p. 217; New Rem., 6, p. 115.)

Calls attention to an inaccuracy of original test, (Wayne, E.C.) and tells how the test should be carried out.

Siebold, L.

1877.

Copaiba Testing.

Chem. & Drugg., 19, p. 13; Pharm. Jour. 37, pp. 250; Yrbk. Brit. Pharm. Conf., 14, p. 601; (Proc. Am. Pharm. Assoc., 26, p. 288.)

Gives general tests for the purity of the oleoresin and also a simple method of ascertaining the presence or absence of an adulterant in any sample of Copaiba.

Wilder, H.M.

1877.

Copaiva in Pills.

Am. Journ. Pharm., 49, p. 441.

Gives a method of preparing Copaiba pills so as to obtain solidification and also a way to prevent the m from becoming stone hard.

Cross, R.

1878.

The Para and Cera Rubbers and Balsam of Copaiba.

Jour. Royal Soc. Arts, 27, p. 784; (Pharm. Jour., 38, p. 86; Proc. Am. Pharm. Assoc., 27, p. 250; New Remedies, 6, p. 5.)

Describes Copaiba trees, method of obtaining balsam, and comments on advisability of introducing the trees into India.

Groves, T.B.

1878.

Miscible Copaiba.

Pharm. Jour., 38, p. 195; (U.S. Dispens., 15 ed., p. 491; *ibid.*, 17 ed., p. 446.)

Gives a method of preparing a soluble or miscible Copaiba and discusses its advantages over the ordinary balsam.

Lehn, L. (Chairman) 1879.

Balsam Copaiba.

Proc. Am. Pharm. Assoc., 27, p. 556.

Gives market price of balsam copaiba.

Stille, A. & Maisch, J. 1879.

Copaiba, U.S., Br. - Copaiva.

Natl. Dispens., 2 ed., p. 459; *ibid.*, 3 ed., p. 503; *ibid.*, 5 ed., p. 536.

Gives common name, foreign titles, scientific name, natural order, origin, collection, description, adulterations, constituents, pharmaceutical use and preparations, allied products, physiological action, medical uses and administration of Copaiba.

Gerrard, A.W. 1880.

Emulsions - Balsam of Copaiba Emulsion.

Pharm. Jour., 40, p. 286.

A formula and method of preparing is given.

Muriae, C. 1 880.

Note Sur Quelques Formes Insolites de L'Erytheme Cubibo-Copahique.

Ann. de Dermatologie, 1, p. 510; (Am. Jour. Med. Sci., 81, p. 289.)

Relates a case of poisoning by cubeb and copaiba.

Brix, R. 1881.

Ueber die Bestandtheile des Copaivabalsams (Maracaibo) und die kaeufliche sogenannte Copaiva-und Mitacopaivasäure.

Zitzungsberichte der Math-Naturw., 84, p. 459; (Proc. Am. Pharm. Assoc., 30, p. 242.)

A new chemical analysis of Maracaibo copaiba balsam, giving constituents and physical constants.

Carles, P.

1881.

Pulvo-copahu dau le croup.

Journ. de pharm. et de chim., 113, p. 45; (Proc. Am. Pharm. Assoc., 30, p. 105.)

Gives a method of obtaining copaiba in powdered form. Describes its advantages as means of administration.

Grote, C.

1881.

Zur Pruefung de Copaiva-Balsams auf Colophonium.

Pharm. Autrlhl., 22, p. 87; (Proc. Am. Pharm. Assoc., 29, p. 221.)

Describes a method of detecting Colophonium in resin of Copaiba.

March, H.C.

1881.

Copaiba in Sciatica.

Chem. & Drugg., 23, p. 115; (Natl. Dispens., 3 ed., p. 507; ibid., 5 ed., p. 541.)

Copaiba has been found to be useful in Sciatica, its power or remedial property is due to power of producing diuresis in certain forms of hepatic dropsy.

Squibb, E.R.

1882.

(Copaiba).

Ephemeris, 3, p. 86; (Proc. Am. Pharm. Assoc., 30, p. 241).

Remarks on the examination of commercial samples of Copaiba.

Barber, J. 1883.

Zur Pruefung des Copaiv und des Peru Balsams.

Pharm. Post, 16, p. 215; (Proc. Am. Pharm. Assoc., 32, p. 185; New Rem., __, p. 278.)

States use of determining purity of Copaiba by using polarized light and starch of *Cauna edulis* as identification.

Oldberg, O. & Wall, O. 1884.

Copaiba; U.S.

Comp. to the U.S.P., p. 370.

Gives official Latin title, official English title, foreign names, common names, origin, habitat, description and tests, varieties, constituents, adulterations, medicinal uses and dose.

Phillips, C.W. 1884.

Emulsion of Balsam Copaiba with Tincture of Chloride of Iron.

Am. Drugg., 13, p. 172.

Discusses the method of preparing the emulsion.

Proßl, E. 1885.

Prüfung der im Handel vorkommenden Sorten Balsamum Copaivae.

Archiv. d. Pharm., 223, pp. 735 & 769. (Proc. Am. Pharm. Assoc., 34, p. 457.)

Report of an extended examination of the Copaiba of Maracaibo, three samples of Para, three of Augsburg, and one each of Bahia, Cartagena, and Maturin Balsam. For comparison, also, two samples of Gurjun balsam were subjected to the same treatment.

Allen, A.H. 1886.

Balsam Copaiba.

Pharm. Rec., 6, p. 372.

The method of assaying, balsam copaiba, the method of detecting oil of turpentine in copaiba, and the method of detecting Venice turpentine in Copaiba is given.

Tschirch, A.

1887.

Copaiba - Origin.

Pharm. Jour., 47, p. 278; (Proc. Am. Pharm. Assoc., 36, p. 390.)

Considers that balsam of copaiba originates in the by destructive metamorphosis of the walls of the vessels and then of the contiguous wood cells.

Beach, H.H.A.

1889.

(Copaiba as a Dressing for Wounds).

Boston Med. & Surg. Rep., 120; (Pharm. Rec. 9, p. 295).

States use of copaiba as dressing for wounds, acts, in combination with cotton, as an absorbent.

Dietrick, E.

1889.

Balsame, Harze, Gummiharze.

Helfenberger Annalen, 4, p. 18. (Pharm. Centralhl., 30, p. 252; Pharm. Journ., 48, p. 865.)

States that Canada balsam, Maracaibo Copaiba balsam, Styraç and Venetian turpentine all give the same acid number. The three copaibas, Maracaibo, East Indian and Para, differ, however, in this respect.

Trimble, H., Lippincott, C.D. & Taschird, T.W.

1889.

Report on Adulterations.

Am. Journ. Pharm., 61, p. 336.

Four samples of Balsam Copaiba were tested and only one responded to all known tests of purity, the others showed adulteration.

Cripps, R.A. 1891.

Estimation of Volatile Oil in Copaiba.

Chem. & Drugg., 39, p. 282; (U.S. Dispens., 17 ed., p. 466; *ibid.*, 19 ed., p. 399; *ibid.*, 20 ed., p. 381.)

Describes method of estimating volatile oil in copaiba, giving apparatus used and advantages of method.

Hoffmann, H.H. 1891.

Copaiba (Balsam Copaiba).

Pharm. Era, 6, p. 360. (Proc. Am. Pharm. Assoc., 40, p. 635.)

Defines Copaiba gives botanical source, family, method of obtaining drug, physical properties, possible adulterant and tests for purity.

Obolinsky, I. N. 1891.

Balsam Copaiba as a Diuretic.

Brit. Med. Jour., 2, p. 45. (Am. Drugg., 20, p. 295.)

Gives advantage of copaiba, in form of an emulsion, as a diuretic. Compares with digitalis and calomel and other diuretics.

Umy, J.C. 1891.

African Copaiba "So-Called".

Pharm. Jour. 51, p. 449; (Am. Jour. Pharm., 64, p. 33; Pharm. Rec., 12, p. 436.)

African Copaiba resembles in most particulars the South American Copaibas.

Wardleworth, T.H. 1891.

Bals. Copaibae.

Pharm. Jour., 51, p. 439.

A variety of "African Balsam Copaiba" appearing at that time was found not to belong to the *copaifera* family.

Beckurts, H. & Brüche 1892.

Experimentelle Untersuchungen ueber die Wertbestimmung der Harze und Balsame-Balsamum Copaivae.

Archiv der Pharm., 230, p. 65; (U.S. Dispens., 17 ed., p. 447; *ibid.*, 19 ed., p. 400; *ibid.*, 20 ed., p. 383; *ibid.*, 21 ed., p. 380.)

A detailed report of seven unknown and eleven known origins of *copaiba* as to physical and chemical constants based on tests of the German pharmacopoeia.

Holmes, E.M. 1892.

The Relation of Geography and Materia Medica (*Copaiba*).

Am. Journ. Pharm., 64, p. 246.

An article imported from W. Africa was found to have similar physical and chemical properties to those of the genuine drug, but the taste and physiological action may differ.

Snow, H.W. 1892.

Note on Solidifiable Balsam of *Copaiba*.

West. Drugg., 14, 325; (Yrbk. Brit. Pharm. Conf., 30, p. 163; Proc. Am. Pharm. Assoc., 41, p. 663; Pharm. Jour., 52, p. 442.)

Comments of solidification of *copaiba* balsam and states that *copaiva* containing less than 48% of resin will not be found satisfactory for making mass of *Copaiba*.

Bronowsky, __. 1893.

Nouvelle contributions a l'action diuretique du baume ele copahu.

Univ. Remedes, 9, p. 504; (Am. Journ. Pharm., 66, p. 41; Am. Drugg., 24, p. 32.)

Cite the new use and action of copaiba as a diuretic.

Conpland, H.S.

1893.

Notes on Practical Dispensing.

Chem. and Drugg., 42, p. 734; (Proc. Am. Pharm. Assoc., 41, p. 662.)

Describes a method of making soluble copaiba by treating it with a strong solution of carbonate of potassium.

Umney, J.C.

1893.

African Copaiba.

Yrbk. Br. Pharm. Conf., 30, p. 421; (Pharm. Journ., 53, p. 215; Am. Jour. Pharm., 65, p. 544; U.S. Dispens., 19 ed., p. 399; *ibid.*, 20 ed., p. 381; *ibid.*, 21 ed., p. 380.)

Having already compared two samples of African Copaiba with that of South American Copaiba as to general characters, Umney makes a more extended examination of the volatile oil and crystalline derivatives and compares them with those obtained from South American Copaiba. He finds that African copaiba corresponds with that imported from South America.

Flueckiger, F.A.

1893.

Afrikanische Copaivabaeume und das frauzoesische Colonial museum in Marseille.

Pharm. Post., 26, p. 613; (Proc. Am. Pharm. Assoc., 42, p. 899.)

Contributes to the knowledge of species yielding copaiba and the products in the Colonial Museum at Marseilles.

1894.

(Tests for Copaiba).

Montreal Pharm. Jour., __, p. __; (Chem. & Drugg., 45, p. 740; Proc. Am. Pharm. Assoc., 43, p. 865).

Gives a test to identify gurjun balsam in Copaiba.

Dodge and Olcott

1895.

Copaiba, Detection of Gurjun Balsam as Adulterant.

Am. Drugg., 27, p. 5; (U.S. Dispens., 19 ed., p. 401; ibid., 20 ed., p. 383; ibid., 21 ed., p. 380; Proc. Am. Pharm. Assoc., 44, p. 628; Pharm. Journ., 55, p. 76.)

An effective test for the detection of adulterants in copaiba is given and recommended to replace other inadequate tests which have been unsatisfactory causing a general feeling of distrust.

Ewell, __.

1895.

(Zur Prüfung des Copaiva balsams).

Nord. Farm. Tijdskr. __, p. __; (Pharm. Centralhl., 36, p. 460; Proc. Am. Pharm. Assoc., 44, p. 629.)

Gives a modified test for identity and quality of copaiba.

Kebler, L.F.

1895.

Tests for the Purity of Copaiba.

Am. Drugg., 27, p. 285.

A summarized report of results, comparisons of different methods of examining balsam copaiba.

Kebler, L.F.

1895.

Balsam Copaiba vs. Gurjun Balsam.

Am. Jour. Pharm., 67, p. 394; (Pharm. Jour., 55, p. 177.)

Gives tests to identify adulterations of gurjun balsam in balsam copaiba and shows that of all these, only the glacial acetic acid test is always reliable.

Simmonds, P.L.

1895.

Notes on Some Saps and Secretions Used in Pharmacy. (Copaiba).

Am. Jour. Pharm., 67, p. 130.

Gives species, source, a brief method of collection, medicinal uses and imports into United States.

Rollo, W.

1895.

Ueber Bals. Copaivae-Pillen.

Pharm. Ztg., 40, p. 231; (Proc. Am. Pharm. Assoc., 43, p. 591.)

Remarks that pills of copaiba made with yellow wax possess a great many drawbacks and advises the use of calcined magnesia for forming the mass.

Altschul, J.

1896.

Flueckiger's Prüfung des Copaivabalsams auf Gurjunbalsam.

Pharm. Centralhl., 37, p. 436; (Pharm. Era, 16, p. 497.)

Gives test of detecting gurjun balsam in copaiba by using carbon disulphide and equal parts of nitric and sulfuric acid.

Hanson, G.F.

1896.

Some Examples of Drug and Food Adulteration - Balsam Copaiba.

Am. Drugg., 29, p. 220.

A record of the importations of balsam of Copaiba for two years as compared with the amount of copaiba used during that time, is enlightening, showing that it is greatly adulterated; gurjun balsam is said to be the principle adulterant.

Hirschonsonhu, __.

1896.

Test for Gurjun Balsam.

Pharm. Era., 16, p. 658.

Gives a test for Gurjun balsam in Copaiba.

Bosetti, E.

1897.

Testing Balsam Copaiba.

Am. Drugg., 29, p. 290; (King's Am. Dispens., 18 ed., v. 1, p. 600; Proc. Am. Pharm. Assoc., 45, p. 557.)

The insufficiency of the ammonia test prescribed in the German pharmacopoeia and a better method for detection of adulterants is given.

Conroy, __.

1897.

Copaiba Balsam.

Chem. & Drugg., 50, p. 386.

Called attention to large number of samples of adulterated and factitious copaiba balsam that had lately been examined by him. He found the adulterant to be usually a fixed oil.

Dietze, __.

1897.

Copaiba from Venezuela.

Am. Drugg., 30, p. 199. (Pharm., Zeitg., 62, p. 241; Pharm. Journ. 58, p. 369.)

A report of examination of copaiba from Maturin, in the state of Bermudez. Copaiba shows the presence of adulterants and did not conform with the U.S.P.

Kebler, L.F.

1897.

Balsam Copaiba, Oil of Copaiba, Mass Copaiba, Resin Copaiba and Gurjan Balsam.

Am. Journ. Pharm., 69, p. 577; (Proc. Am. Pharm. Assoc., 46, p. 853; Chem. and Drugg., 52, p. 23.)

Gives commercial characters, tests of distinction of Copaiba from Gurjan Balsam, inadequate requirement of Pharmacopoeia for Copaiba, and unusefulness of Resin Copaiba.

Thompson, W.H.

1897.

Case of Copaiba Poisoning.

Brit. Med. Journ. 1897, v. 1, p. 522; (Proc. Am. Pharm. Assoc., 45, p. 558; Pharm. Jour., 58, p. 369; Am. Drugg., 30, p. 289.)

Describes symptom of copaiba poisoning, coming from use of copaiba in gonorrhoea.

Dietrick, K.

1898.

Die analytische Prüfung der Balsame, Harze, Gummi-harze und Milcheäfte - speciele fuer das Deutsche Arznei-buch III.

Pharm. Centralhl., 39, p. 323; (Pharm. Jour., 62, p. 321; Chem. & Drugg., 53, p. 129.)

Discusses under the balsams, balsam of Copaiba.

Felter, H.W. & Lloyd, J.U.

1898.

Copaiba (U.S.P.) Copaiba.

King's Am. Dispens., 18 ed., v. 1, p. 599.

Gives scientific name, natural order, common names, botanical source, history, collection, description, chemical composition, adulteration, action, medical uses, dosage, specific indications and uses.

Hager, H.

1898.

Balsamum Copaivae.

Pharm. Centralhl., 39, p. 325; (Proc. Am. Pharm. Assoc., 24, p. 191; U.S. Dispens., 17 ed., p. 447; *ibid.*, 19 ed., p. 400; *ibid.*, 20 ed., p. 383; Proc. Am. Pharm. Assoc., 31, p. 161.)

Describes tests for copaiba, using mainly alcohol.

Henderson, H.J.

1898.

The Official Tests for Gurjun Balsam in Copaiba.

Pharm. Jour., 61, p. 645.

Gives several helpful notes in application to the for gurjun balsam in Copaiba are given.

Lloyd, J.U.

1898.

Copaifera Officinalis.

West. Drugg., 20, p. 54. (Proc. Am. Pharm. Assoc., 46, p. 853.)

Gives historical, botanical and pharmaceutical accounts of Copaiba.

Rice, C.

1898

On the Spelling of the Name *Copaifera Langsdorffii*.

West. Drugg., 20, p. 489; (Proc. Am. Pharm. Assoc., 47, p. 566.)

Comments on the incorrect spelling of *Langsdorffii* by Desfontaines and how the incorrect spelling passed into many succeeding books.

Dieterick, K.

1899.

Ueber seltene Copaiva balsame and Mekka balsam.

Pharm. Centralhl., 40, p. 311; (Proc. Am. Pharm. Assoc., 47, p. 567; Pharm. Jour., 64, p. 227.)

Gives results of the investigations of some of the rarer sorts of copaiba, such as Augostura, Babia, Carthagena, Maturin, and the West African Illurin balsam, giving constants obtained, together with those obtained with certain samples of Gurjun and Mecca balsam.

Gebe & Co.

1899.

Balsamum Copaivae.

Handelsberichte, April, 1899, p. 9. (Pharm. Centralhl., 40, p. 269; Pharm. Jour., 64, p. 312.)

Disputes data of K. Dietrick and quotes figures, comparing constants.

Poole, ____.

1899.

Balsamum Copaivae Surinamense.

Pharm. Centralhl., 40, p. 503; (Proc. Am. Pharm. Assoc., 48, p. 648; Pharm. Jour., 63, p. 377; Chem. & Drugg., 52, p. 591; Pharm. Zeitg., 63, p. 129; Proc. Am. Pharm. Assoc., 46, p. 853; Pharm. Era, 19, p. 629.

Gives characters and distinction from other sorts of Copaiba.

Bell, E.W.

1900.

Copaiba of British Guiana.

Am. Jour. Pharm., 72, p. 447.

Found specimen to conform with all tests of British Pharmacopoeia, except as regards the optical rotation of the volatile oil.

Bell, E.W.

1900.

Copaiba - It's assay and Tests.

Chem. and Drugg., 57, p. 166; (Yrbk. Br. Pharm. Conf., __, p. 519; Proc. Am. Pharm. Assoc., 49, p. 730; Pharm. Era, 24, p. 147.)

States percentage of oil in balsam copaiba, rotation of essential oil, boiling point of oil and titration figures. Gives suggestions for corrections of tests in British Pharmacopoeia.

Short, F.W.

1900.

The Official Tests for Copaiba.

Pharm. Journ. 64, p. 54; (Proc. Am. Pharm. Assoc., 48, p. 648.)

Criticises British Pharmacopoeia tests and characterization of Copaiba by Umney. Advises a change made in the U.S.P. test.

Keto, E.

1901.

Copaiba Resins.

Chem. & Drugg., 59, p. 538. (Archiv. d. Pharm., 239, pp. 548 & 581; Proc. Am. Pharm. Assoc., 50, p. 879; U.S. Dispens., 19 ed., p. 398; *ibid.*, 20 ed., p. 381; *ibid.*, 21 ed., p. 379; Pharm. Journ., 67, p. 575.)

Gives the results of his examination of the resins of copaiba, with the finding in addition to alpha copavie acid, the new beta copavie acid.

Umney, J.C. & Bennett, C.T. 1901.

Copaiba.

Yrbk. Brit. Pharm. Conf., 38, p. 140; Pharm. Jour., 66, p. 324; (Proc. Am. Pharm. Assoc., 49, p. 728; U.S. Dispens., 19 ed., p. 398; *ibid.*, 20 ed., p. 380; *ibid.*, 21 ed., p. 379.) Chem. & Drugg., 58, p. 436; Pharm. Era, 25, p. 502.

Comments on variability of copaiba and questions the British pharmacopoeial definition.

Kebler, L.F. 1902.

Adulteration of Drugs - Oil of Copaiba.

Pharm. Jour., 68, p. 535. Am. Jour. Pharm., 73, p. 573.

Comments on glacial acetic acid test for oil of gurjun balsam in oil of Copaiba.

Barclay, J. 1903.

(Copaiba - Commercial Examination).

Pharm. Jour. 70, p. 96; (Proc. Am. Pharm. Assoc., 51, p. 797.)

Gives notes on examination of commercial samples; advises a perfection of a method of detecting the presence of gurjun balsam.

Caesar, __. & Foretz, __. 1903.

Prüfung und Wertbestimmung einiger Arzneidrogen
Balsamum Copaivae.

Pharm. Zeit., 48, p. 754; (Proc. Am. Pharm. Assoc., 52, p. 721.)

Calls attention to necessity of establishing the solubility of genuine copaiba in petroleum ether within more definite limits than is now required by the German Pharmacopoeia. State the copaibas that respond to Rosetti's ammonia test can be safely accepted as belonging to the better and purer commercial sorts.

Mann, E.W.

1903.

Note on Copaiba.

Pharm. Journ., 70, p. 419; Chem. & Drugg., 62, p. 491.

Comments on reliability of British Pharmacopoeia tests for copaiba in detecting gurjun balsam.

Parry, E.J.

1903.

Adulterated Copaiba.

Chem. & Drugg., 62, p. 332.

Comments on narrow limits of optical rotation in British Pharmacopoeia and states that they should be widened as under the present test, many samples of oil will have to be declared impure.

Southall, __., Brosand, __., & Barclay, J.W.

1903.

Notes on Essential Oil - Copaiba.

Pharm. Jour., 71, p. 686.

Gives data on the specific gravity and rotation of oil prepared by themselves.

Dohme, A.R.L. & Englehardt, H.

1904.

Balsam Copaiba.

Pharm. Review 22, p. 376; (Caesar & Loretz, Handelsbericht, 1905, p. 9; Pharm. Zeitg., 50, p. 770; Proc. Am. Pharm. Assoc., 54, p. 789).

Describes practical methods for the detection of adulterants.

Dohme, A.R.L. & Engelhardt, H.

1904.

Copaiba.

Proc. Am. Pharm. Assoc., 52, p. 322; (U.S. Dispens., 19 ed., p. 401; *ibid.*, 20 ed., p. 383; *ibid.*, 21 ed., p. 381.)

Gives numerous tests for purity, examination for adulterations with Gurjun balsam and paraffin, detection of fixed oils, turpentine and rosin; solubilities, method of determining acid, ester and saponification numbers.

Italie, van L. & Nieuoland, C.H.

1904.

Surinam Copaiba Balsam.

Chem. & Drugg., 65, p. 1052; (Apoth. Zeitg., 19, p. 816; Pharm. Era, 32, p. 602; Pharm. Journ. 73, p. 773; Proc. Am. Pharm. Assoc., 53, p. 669.)

Gives the results of the examination of seven samples of Surinam Copaiba.

Lewis, S.J.

1904.

Copaiba.

Chem. & Drugg., 65, p. 778. (Proc. Am. Pharm. Assoc., 53, p. 670.)

Describes a more satisfactory method of obtaining the resin factor, than the one E.W. Bell communicated to the British Pharmaceutical Conference in 1900. Was not able to find any communications of E. W. Bell.

Sayre, L.E.

1904.

Copaiba and its Tests.

Drugg. Circ., 48, p. 165; (Proc. Am. Pharm. Assoc., 53, p. 671.)

Comments on Copaiba and the inadequate tests for it in the U.S.P., the limits being too narrow thus excluding many pure balsams.

Beitter, __.

1905.

Beiträge zur Untersuchung von Copaiva-und Perubalsam.

Südd. Apoth. Zeitg., 14, p. 109; (Pharm. Zeitg., 50, p. 179; Proc. Am. Pharm. Assoc., 53, p. 691).

Describes a method of detecting gurjun balsam in Balsam Copaiba and Balsam Peru.

Kline, C.M.

1905.

African Balsam of Copaiba.

Am. Jour. Pharm., 77, p. 185; (Proc. Am. Pharm. Assoc., 53, p. 669; Proc. Penna. Pharm. Assoc., ____, p. 176; Chem. & Drugg., 68, p. 162.

Favors the use of African Balsam of Copaiba, condemning the pharmacopoeias of different nations for excluding it. Gives possibilities of its legitimate medicinal use.

Itallie, van L. & Nieuöland, C.H.

1906.

Ueber due Surinamensichen Copaivabalsam.

Arch. d. Pharm., 244, p. 161; (Proc. Am. Pharm. Assoc., 54, p. 790.)

A review of the constituents and methods of determining them.

Knoll, & Co.

1906.

Darstellung von neutralen Praeparatem aus Kopaivabalsam.

Pharm. Ztg., 51, p. 192; Chem. Zeitg., 30, p. 115; (Pharm. Jour., 76, p. 319; Proc. Am. Pharm. Assoc., 54, p. 865).

States that the disturbing effect of copaiba in the digestive organs can be avoided by acetylating the resin acids.

Korps, __.

1906.

Beiträge zur Untersuchung von Copaivabalsam.

Apoth. Zeitg., 21, p. 73; (Pharm. Jour., 76, p. 349.)

Gives several physical constants of copaiba oil.

Wahlbaum, E. 1906.

(Der Nachweis von Kolophonium in Copaviabalsam.)

Arch. Pharm. Kuni, 13, p. 301; (Pharm. Zeitg., 51, p. 1073; Proc. Am. Pharm. Assoc., 55, p. 807; Pharm. Jour., 18, p. 27.)

Gives test by which colophonium can be detected in copaiba.

Parry, E.J. 1907.

(Copaiba).

Chem. & Drugg., 71, p. 518; (Am. Jour. Pharm., 79, p. 576; Proc. Am. Pharm. Assoc., 56, p. 240; Am. Drugg., 54, p. 127.)

States that a large amount of adulteration of Copaiba is being practiced. Mentions a possible adulterant, hardwichia balsam, giving the botanical source of adulterants.

Vanderkleed, C.E. & Turner, J.L. 1907.

A New Test for Gurjun Balsam is Copaiba.

Am. Jour. Pharm., 80, p. 11; (Pharm. Jour. 80, p. 127.)

Old tests for gurjun balsam in Copaiba are discussed, nothing new is offered.

Weigel, G. 1907.

The Optical Rotation of the Essential Oil of Copaiba.

Chem. & Drugg., 71, p. 617.

Comments on changeability of E. J. Parry in reference to his reports on optical rotation of essential oil of copaiba and mentions that such may cause erroneous interpretations in business circles. Disagrees with Parry as to optical rotation, figures and reports his own figures.

Eibner, __. 1908.

(Copaiba and Copaiba Oils).

Farben. Zeitg., 13, p. 1627; (Proc. Am. Pharm. Assoc., 57, p. 213.)

A review of the distinctive characters of the known sorts of genuine copaiba and copaiba oils, their sophistications and substitutes.

Jackson, J. & Warren, J.C.

1908.

Copaifera Officinalis.

Pharm. Mass. Med. Soc., 1808, p. 15.

Defines copaiba as a liquid resin.

Schimmel & Co.

1908.

Copaivabalsamöl, afrikanisches.

Berichte Report, Oct., 1908, p. 36; (Proc. Am. Pharm. Assoc. 57, p. 214.)

Comments on African Copaiba, its volatile oil, properties and its constants.

Hartwich, C.

1909.

Copaivabalsam.

Schweiz. Wschr. f. Chem. u. Pharm., 47, p. 373; (Schimmel's Semi Annual Report, Oct. 1909, p. 133; Proc. Am. Pharm. Assoc., 58, p. 210; Pharm. Jour., 83, p. 30.)

Gives description of copaiba, source and properties.

Schimmel & Co.

1909.

Copaivabalsam, bolivianischer.

Berichte, Oct., 1909, p. 133. (Proc. Am. Pharm. Assoc., 58, p. 210.)

Gives source and properties of Bolivian Copaiba.

Umney, J.C.

1909.

Suggested International Standards for Drugs.

Chem. & Drugg., 75, p. 579.

Suggests changing commercial standards of specific gravity, the range of which is too wide; the optical rotation, the range of which is too narrow; and the acid number which is too high.

Coeking, T.T. 1910.

Detection of African Copaiba.

Chem. & Drugg., 77, p. 119.

Gives a method of detecting South American Copaibas in African Copaiba. A table of "optical rotation of the volatile oils and fractions thereof" is also given.

Deuben, E. & Hahn, A. 1910.

Ueber das Copaivabalsamol.

Chem. Zeitg., 34, p. 873; (Proc. Am. Pharm. Assoc., 59, p. 374.)

Cites the distinctive character of its caryophyllene constituent.

Parry, E.J. 1911.

Some Suggested Pharmacopoeial Standards. Copaiba.

Chem. & Drugg., 78, p. 378; (Yrbk. Am. Pharm. Assoc., 1, p. 222.)

Tells how to distinguish African Copaiba and Gurjun balsam from South American Copaiba by rotatory characters of volatile oil together with Gurjun oil color reactions.

Caesar, __. & Fortex, __. 1912.

Balsamum Copaivae.

Handelsbericht Ann. Rept., 1912, p. 108; (Pharm. Zeitg., 57, p. 845; Yrbk. Am. Pharm. Assoc., 1, p. 221.)

Describes various methods of adulteration of Copaiba.

Coeking, T.T.

1912.

Copaiba.

Chem. & Drugg., 80, p. 128.

Gives a modified process of detecting African Copaiba in Copaiba and Answers E. J. Parry's criticism of his report published in the Chem. & Drugg., 77, p. 119. Parry's criticism appeared in Chem. & Drugg., 80, p. 19.

Parry, E.J.

1912.

Copaiba.

Chem. & Drugg., 80, p. 19.

Comments on the undesirability of including certain features of T. T. Coeking's report (Chem. & Drugg., 77, p. 119) as has been recommended in the next edition of the British Pharmacopoeia. Gives reasons.

Denben, __, & Eger, __.

1913.

Balsamum Copaivae.

Pharm. Zeitg., 58, p. 328.

Comments on the distillation of the balsam and gives constants of the volatile oil.

Schaer, __.

1913.

Ueber Balsamum Hardwichiae pinnate.

Pharm. Zeitg., 58, p. 328; (Yrbk. Am. Pharm. Assoc., 2, p. 242.)

States differences of Gurjun Balsam and Copaiba Balsam.

Deussen, E.

1914.

Zur Untersuchung von Offiginellem Copaivabalsam.

Archiv. der pharm., 252, p. 590; (Yrbk. Am. Pharm. Assoc.,

3, p. 312.)

States that of the samples presented to him in the last few years to be tested, 83% were found to be adulterated with gurjun balsam. This extensive use of adulterant is causing the medical men to turn from copaiba to a more expensive one sandal wood oil. Gives a number of tests for purity of copaiba.

Gehe & Co.

1914.

Balsamum Copaivae.

Handelsbericht, 1914, p. 49; (Yrbk. Am. Pharm. Assoc., 3, p. 212; Pharm. Zeitg., 59, p. 320.)

Comments on extensive production of para copaiba balsam in Brazil.

Schimmel & Co.

1914.

Copaiba Balsam Oil.

Semi Annual Report, 1914, p. 48; (Yrbk. Am. Pharm. Assoc., 3, p. 418.)

Gives notes on the investigation of the sesquiterpenes in the volatile oil.

Stockman, R.

1915.

Copaiba Oil and Resin.

Brit. Med. Jour. 1915, 2, p. 128; (Pharm. Era, 48, p. 478; Yrbk. Am. Pharm. Assoc., 4, p. 126; Pharm. Jour., 95, p. 169).

Comments on the optical activity of the oil and inactivity of the resin of Copaiba in delaying putrefaction.

Italie, van S.

1919.

Balsamum Copaivae.

Pharm. Weekblad., 56, p. 1185; (Yrbk. Am. Pharm. Assoc., 8, p. 199.)

Describes the method of examination and gives requirement of balsam copaiba.

Deussen, E.

1922.

Copaiva Balsam.

Pharm. Zeitg., 67, p. 12; (Yrbk., Am. Pharm. Assoc., 11, p. 311.)

States the balsam Copaiba came from many sources and is named according to its service and is distinguished by their volatile oil content and their consequent degree of fluidity. Names the most important adulterants and suggests tests for their detection.

UNITED STATES PHARMACOPOEIA

(1820-1920)

HISTORY

OF

COPAIBA

U.S.P. 1820, P. p. 33

Copaiba Copiaifera Officinalis. W,II.630/
Copaiba Balsamum. The balsam./

U.S.P. 1830 (Phila.)P.p.10

Copaiba Copiaifera Officinalis W.ii 630
Succus. The juice.

U.S.P. (N.Y.) 1830, P. p.30

Copaiba Copiaifera Officinalis
Copaiba. Copaiva, or Capiivi Balsam.

Prop. When recent, of the consistence of oil, becoming thick and/ tenacious by age; transparent; colour pale yellow; odour fragrant/ and peculiar; taste aromatic, bitter, pungent; soluble in alcohol, ex-/pressed and essential oil.

Med. Oper. Stimulent, diuretic, laxative, acts powerfully on the/urinary passages. Dose MX to XI in emulsion, or on sugar.

U.S.P. 1840, P. p. 19.

Copaiba Copaiba

The juice of Copiaifera officinalis, and other/ species of Copiaifera.

U.S.P. 1850, P. p. 23

Copaiba.

Copaiba.

The juice of *Copaifera officinalis*, and of/ other species of *Copaifera*.

U.S.P. 1860, P. p. 27

Copaiba.

Copaiba.

The juice of *Copaifera multijuga*, and of other/ species of *Copaifera*.

U.S.P. 1870, P. p. 28

Copaiba.

Copaiba.

The oleo-resin of *Copaifera multijuga* (Hayne), and/ of other species of *Copaifera*.

U.S.P. 1880, P. p.86

Copaiba

Copaiba

(Balsam of Copaiba)

The oleoresin of *Copaifera Langsdorffi* Desfontaines, and of other spe-/cies of *Copaifera* (Nat. Ord., Leguminosae, Papilionaceae).

A transparent or translucent, more or less viscid liquid of a color varying from/ pale yellow to brownish-yellow; having a peculiar, aromatic odor and a persist-/ently bitter

and acrid taste. Sp.gr. 0.940-0.993. It is readily soluble in absolute alcohol. It is not fluorescent, and when heated to 130^oC. (266^oF.), does not become gelatinous. When subject to heat, it does not evolve the odor of turpentine, and, after distilling off the volatile oil, the residue, when cool, should be hard and friable (abs. of fixed oils). The essential oil distilled off from the oleoresin, when rectified, should not begin to boil below 200^oC. (392^oF.) on adding 1 drop of Copaiba to 19 drops of disulphide of carbon and shaking the mixture with 1 drop of a cold mixture of equal parts of sulphuric and nitric acids, it should not acquire a purplish-red or violet color (abs. of gurjun balsam)

Preparation: Massa Copaiba.

U.S.P. 1890, P. p.100.

Copaiba

Copaiba

(Balsam of Copaiba)

The oleoresin of *Copaiba Langsdorffi* (Desfontaines) O. Kuntze, and of other species of *Copaifera* (nat. ord. Leguminosae).

A transparent or translucent, more or less viscid liquid, of a pale yellow to brownish-yellow color, having a peculiar, aromatic odor, and a bitter and acrid taste.

Specific gravity: 0.940 to 0.990 at 15^oC. (59^oF.).

Insoluble in water; readily soluble in absolute alcohol, ether, chloroform, / carbon disulphide, benzin, and fixed and volatile oils. It yields a transparent / mixture with one-third of its volume of ammonia water.

When Copaiba is heated, it should not evolve the odor of turpentine. When the volatile oil has been completely driven off by heating Copaiba / in a flat bottomed capsule, the residue, when cold, should be amorphous, / transparent, and friable (absence of fixed oils).

Copaiba should not be fluorescent, and, when heated to 130^o C. (266^o F.), it / should not become gelatinous. On adding 1 drop of Copaiba to 19 drops of / carbon di-sulphide, and shaking the mixture with 1 drop of a cold mixture of / equal parts of nitric acid and sulphuric acid, it should not acquire a purplish-red / or violet color (absence of gurjun balsam).

Preparation: Massa Copaibae.

U.S.P. 1900, p. 117.

Copaiba

Copaiba

An oleoresin derived from one or more South American species of / Copaiba. (Fam. Leguminosae).

A pale yellow to brownish-yellow, more or less transparent and viscid liquid / sometimes fluorescent; having a peculiar, aromatic odor and a persistent, bitter / and acrid

taste.

Specific gravity 0.950 to 0.995 at 25°C. (77°F.)

Insoluble in water; soluble or showing at most a slight opalescence, in/ absolute alcohol, carbon disulphide, petroleum benzin, and in fixed and volatile/ oils; completely soluble in chloroform and ether. When heated on a water bath, it should evolve no odor of turpentine, and/ after forty-eight hours should leave a resinous mass weighing not less than 50/ percent of its original weight.

One Gm. of Copaiba, when dissolved in 50 Cc. of alcohol, should require not/ less than 2.3 Cc. and not more than 3.2 Cc. of half normal alcoholic potassium/ hydroxide V.S. for neutralization, using 1 Cc. of phenolphthalein T.S. as indicator (presence of a normal proportion of acid resin).

When 1 drop of nitric acid (Sp.gr. 1.40) and 3 Cc. of glacial acetic acid are/ mixed in a test tube, and 4 drops of Copaiba are carefully poured on top of the/ liquid, no reddish zone should appear; nor should the fluid assume a red or/ purple color after being shaken (absence of gurjun balsam).

If 5 Cc. of Copaiba be shaken with 15 Cc. of alcohol, and heated to boiling for/ one minute, no drops of oil should separate after cooling and standing for an/ hour (absence of paraffin oils).

If 20 drops of Copaiba be boiled with 1 Cc. of an alcoholic potassium hydrox- / ide solution (1 in 10) for two minutes and cooled, and then twice its volume of / ether be added to the liquid, no gelatinization should occur (absence of fixed oils).

If 1 Gm. of Copaiba be shaken with 10 Cc. of ammonia water in a stoppered / vial, and allowed to stand for twenty four hours, the liquid will become turbid, / but it should not gelatinize, nor should a firm mass be formed (limit of resin).

Average dose - 1 cc. (15 minims).

U.S.P. 1910, p. 123.

Copaiba

Copaiba

Copaib. - Balsam of Copaiba. Copaiva.

An oleoresin derived from South American species of Copaiba (Fam. Leguminosae).

Copaiba is a pale yellow to a brownish-yellow more or less viscid liquid either / without fluorescence or with only a slightly greenish fluorescence; having a / peculiar, aromatic odor, and a persistent, bitter and acrid taste.

It is insoluble in water and partly soluble in alcohol. Soluble, showing not / more than a slight opalescence, in dehydrated alcohol, carbon disulphide, or / in fixed or volatile oils; completely soluble in chloroform or ether

and also/ soluble in an equal volume of petroleum benzin, a further addition of the solvent/ producing a flocculent precipitate.

Specific gravity 0.940 to 0.995 at 25^o C.

When heated on a water bath, no odor of oil of turpentine is evolved; and/ when all the volatile oil has been driven off, a hard brittle resin remains,/weighting not less than 35 percent of the original weight of the Copaiba. taken/(paraffin or fatty oils). To about 1 Gm. of Copaiba, accurately weighted, add 50 mils of alcohol/, and 1 mil of phenol phthalein T.S., then titrate the solution with half normal/ potassium hydroxide V.S. It shows an acid value of not less than 28 nor more than 95.

Dissolve 3 or 4 drops of the volatile oil separated from Copaiba by distilla-/tion with steam, in 3 mils of glacial acetic acid, mix the solution with 1 drop of/ a freshly prepared aqueous solution of sodium nitrite (1 in 16), and carefully/ underlay this with 2 mils of sulphuric acid. The acetic layer is not colored pink/ (gurjun balsam). Shake 5 mils of Copaiba with 15 mils of alcohol and then beat the mixture to/ boiling for one minute; no oil separates after cooling and allowing it to stand for/ one hour (paraffin oils).

The volatile oil separated from Copaiba by distillation with steam does not/ boil below 250^oC. and shows an angle of rotation in a 100 mm. tube of not less/ than -7^o

at 25^o C. (African Copaiba).

Average Dose - Metric, 1 mil

Apothecaries, 15 minims.

U.S.P. 1920, P. p. 119.

Copaiba

Copaiba

Copaib. - Balsam Copaiba

An oleoresin derived from South American species of Copaiba (Fam. Leguminosae).

Description and physical properties - A pale yellow to a brownish-yellow, more or/ less viscid liquid, either without fluorescence or with only a slightly greenish/ fluorescence. It has a peculiar, aromatic odor, with a persistent, bitter, acrid/ taste.

Copaiba is insoluble in water, partly soluble in alcohol, more completely/ soluble in dehydrated alcohol. It is soluble in carbon disulphide and in fixed/ or volatile oils, completely soluble in chloroform and in ether, also soluble in an/ equal volume of petroleum benzin, the further addition of the solvent pro-/ducing a flocculent precipitate.

Tests for purity - Specific gravity: 0.940 to 0.995 at 25^o C.

Heat about 2 Gms. of Copaiba, accurately weighted, in a shallow dish on a/ water bath: no odor of oil of turpentine is evolved. Continue the heating until/ all of

the volatile oil has been driven off: a resin remains, corresponding to/ not less than 36 per cent of the original weight of the Copaiba taken. This/ resin when cooled is hard and brittle (paraffin or fatty oils). Its acid number is/ not less than 28 and not more than 95, page 427.

Shake 5 cc. of Copaiba with 15 cc. of alcohol, boil mixture for one/ minute, and cool: no oil separates after standing for one hour (paraffin oils). Mix one drop of nitric acid and 3 cc. of glacial acetic acid in a test tube/ and carefully add four drops of the oil separated from the Copaiba by distillation with steam: No reddish zone appears, nor does the liquid become red or/ purple after being shaken (gurjun balsam).

Dissolve 2 Gms. of Copaiba in 40 cc. of dehydrated alcohol, filter on counter-/balance filters or with aid of Gooch crucible, and wash with small/ portions of dehydrated alcohol until the washings are colorless or nearly so:/ the residue dried at 80^o C. does not exceed 5 per cent.

The volatile oil separated from Copaiba by distillation with steam does not/ boil below 250^oC., and shows an angle of rotation in 9100 mm. tube of not/ less than -7^o at 25^oC. (African Copaiba)

Average Dose - Metric, 1 cc.

Apothecaries, 15 Minims.

Summary of the U.S.P. 1820-1920

data Copaiba

Official

1820, '30 (Phila.), '30 (N.Y.), '40, '50, '60, '70,
'80, '90, 1900, '10, '20.

Official Latin Title

Copaiba 1820, '30 (Phila.), '30 (N.Y.), '40, '50, '60,
'70, '80, '90, 1900, '10, '20.

Official English Title

Copaiba 1820, '30 (N.Y.), '40, '50, '60, '70, '80, '90,
1900, '10, '20.

Official Abbreviation

Copaib. 1910, '20

Official Syn.

Copaiva 1830 (N.Y.), 1910

Copivi Balsam 1830 (N.Y.)

(Balsam of Copaiba) 1880, '90

Balsam of Copaiba, 1910, '20

Scientific name

Copaifera officinalis, 1820, '30 (Phila.), '30 (N.Y.),
'40, '50.

Copaifera multijuga, 1860

Copaifera multijuga (Hayne) and of other species of
Copaiba, 1870.

Copaifera Landsdorffii

Desfontaines and other Spe-/cies of Copaifera 1880.

Copaifera Landsdorffii (Desfontaines) O. Kuntze, and/
of other Species of *Copaifera* 1890.

South American Species of *Copaiba*, 1900, '10, '20.

Family

Leguminosae, Papilionaceae 1880

Leguminosae, 1890, 1900, '10, '20

Parts Used

The balsam 1820

The juice 1830 (Phila.), '40, '50, '60

The oleoresin 1870, '80, '90, 1900, '10, '20

Description

1830 (N.Y.), '80, '90, 1900, '10, '20.

Dose

MX to XL in emulsion or on sugar 1830 (N.Y.)

Average dose 1 cc. (15 minims) 1900

Average dose metric, 1 mil; apothecaries 15 minims, 1910.

Average dose, metric 1 cc.; Apothecaries 15 minims. 1920

Official Preparation

Massa *Copaiba* 1880, '90

Medicinal operations

1830 (N.Y.)

Properties

1830 (N.Y.)

List of Journals Consulted.

American Druggist	1884-1892
American Druggist & Pharmaceut- ical Record	1893-1925
✓ American Journal of Pharmacy	1829-1925
Chemist & Druggist	1859-1926
Druggist Circular	1857-1886
New Remedies	1877-1883
Pharmaceutical Era	1887-1926
Pharmaceutical Journal	1841-1926
Pharmaceutical Record	1884-1893
Proceedings, American Pharmaceut- ical Association	1858-1911
Western Druggist	1881-1926
Yearbook, American Pharmaceutical Association	1912-1923

List of Books Consulted.

- American Physician, An Eclectic Dispensatory, 1827.
- Coxe, J.R. American Dispensatory, 1806, 1818, 1827.
- King, J. American Dispensatory, 1864, 1872, 1875, 1918.
- Oldberg, O. & Wall, O.A., Companion to the United
States Pharmacopoeia 1884.
- Stille & Maisch, National Dispensatory, 1879, 1884,
1894.
- Thatcher, J. New American Dispensatory, 1813, 1821.
- Wood, G.B. & Bache, F. United States Dispensatory,
1834, 1836, 1839, 1843, 1854, 1865, 1870, 1879,
1886, 1894, 1907, 1918, 1926.

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