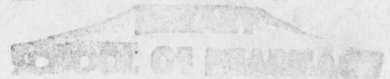


BIBLIOGRAPHY OF
RHAMNUS PURSHIANA
DE CANDOLLE

By

Benjamin James Wright



A Thesis Submitted for the Degree of
GRADUATE IN PHARMACY

University of Wisconsin

1926

Eschscholtz, J.F.

1826.

(Cascara Sagrada).

Memoires of Acad. of St. Petersburg, v. 10. (Am. Jour. Pharm., 86, p. 388; Silva of North America, 2, p. 39.)

Tells of discovery of Rhamnus Purshiana and gives a description of the plant.

Rafinesque, C.S.

1838.

Perfonon Saurifolium.

Silva Telluriana; (Am. Journ. Pharm., 86, p. 388; Botanists of Philadelphia, p. 66; Garden & Forest, 4, p. 76; Silva of North America, 2, p. 39.)

Gives a description of the tree.

Bundy, J.H.

1878.

History and Names of Rhamnus Purshiana.

New Preparations, v. 2, p. 1. (Proc. Am. Pharm. Assoc., 44, p. 198; Am. Drugg. & Pharm. Rec., 29, p. 195; Am. Jour. Pharm., 68, p. 467.)

Recommends cascara as a valuable remedy in constipation and gives names and history of the plant.

Lloyd, C.G.

1878.

Some Specimens of Western Plants.

Proc. Am. Pharm. Assoc., 26, p. 707; (Origin & Hist. of Pharm. Veg. Drugs, Chems. & Preps. v. 1, p. 266.)

Quotes Dr. Adair as saying that the name Cascara Sagrada is a deception and should be Rhamnus Persica.

Lloyd, J.U.

1878.

Miscellaneous Notes.

Am. Jour. Pharm., 50, p. 601.

States the article introduced under the name of cascara

sagrada was ascertained to be the bark of *Rhamnus Purshiana*.

Alvord, A.W. 1879.

Cascara Sagrada.

New Preparations, v. 3, p. 225.

Explains on which organs Cascara acts.

Blair, R.A. 1879.

Cascara Sagrada.

New Preparations, v. 3, p. 226.

Discusses the use of cascara in certain diseases.

Faulkner, W. 1879.

Cascara Sagrada.

New Preparations, v. 3, p. 226.

Explains how to take Cascara with best results.

Prescott, A.B. 1879.

Chemical and Microscopical Analysis of the Bark of *Rhamnus Purshiana*. (Cascara Sagrada).

Am. Jour. Pharm., 51, p. 165. (King's Am. Dispens., 18 ed., 3 rev., v. 2, p. 165; Proc. Am. Pharm. Assoc., 27, p. 262; *ibid.*, 45, p. 201; Am. Jour. Pharm., 54, p. 462; *ibid.*, 57, p. 205; *ibid.*, 60, p. 87; Proc. Am. Pharm. Assoc., 52, p. 289.)

Gives detailed description of bark, chemical constituents and transverse and longitudinal drawings of bark as observed in a microscope.

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

Rhamnus Purshiana.

Natl. Dispens., 2 ed., p. 659. (*Silva of North America*, 2, p. 39.)

Gives brief description of and an account of the constituents of the drug.

Kennedy, G.W.

1880.

Pharmaceutical Preparations of Bark of Rhus Purshiana.

Am. Jour. Pharm., 52, p. 516. (Drugg. Circ., 25, p. 117; New Rem., 9, p. 308.)

Discusses preparations and the action of Cascara.

Lehn, L.

1880.

Cascara Sagrada.

Proc. Am. Pharm. Assoc., 28, p. 369.

Says it is a new remedy and a valuable addition to Materia Medica.

Coit, H.L.

1881.

Cascara Sagrada.

Drugg. Circ., v. 25, p. 19.

Gives history and uses of Cascara.

(Editor)

1881.

Cascara Sagrada as an Aphrodisiac.

Drugg. Circ., v. 25, p. 157.

Claims that cascara has aphrodisiac properties.

Hooker, Sir W.J.

1881.

Rhamnus Purshiana.

Flora Bos. Amer., v. 1, p. 43. (New Remedies, v. 10, p. 131).

Gives habitat, description of tree and uses.

Wolff, L. 1881.

The Therapeutic Properties of *Rhamnus purshiana*.

Am. Jour. Pharm., v. 53, p. 378.

Discusses the action of cascara in different doses.

C --, J.L. 1882.

Fluidextract of Cascara Sagrada.

Drugg. Circ., 26, p. 73.

Gives reasons for using old bark rather than the fresh in preparing the Fluidextract.

Moeller, J.B. 1882.

Bark of *Rhamnus Purshiana*.

Am. Jour. Pharm., 54, p. 462. (U.S. Dispens., 19 ed., p. 1058; Proc. Am. Pharm. Assoc., 31, p. 166.)

Describes bark as seen under a microscope and compares it with *Rhamnus Frangula*.

Tangeman, C.W. 1883.

Cascara Sagrada and its Physiological Action.

Therap. Gaz., 7, p. 485. (West. Drugg., 6, p. 29.)

Gives the physiological action of the drug.

Eberle, E.G. 1884.

Cascara Sagrada.

West Drugg., v. 6, p. 97.

Describes the tree, gives habitat, analysis of the bark and therapeutic properties.

Oldberg, O. & Wall, O.A. 1884.

Rhamnus Purshiana, Cascara Sagrada, Chittam Bark.

Companion to the U.S. Pharmacopoeia, p. 843.

Gives origin, habitat, part used, description, constituents, medicinal uses and dose of the drug.

Stille, A. & Maisch, J.M.

1884.

Rhamnus Purshiana.

Natl. Dispens., 3 ed., p. 712.

Description of properties of the drug according to Wolff, Stieren, Carter and others.

Thompson, C.E.

1884.

A Report of Three Hundred and Five Cases of Habitual and Temporary Constipation Treated with Cascara Sagrada.

Br. Med. Jour., 1884, v. 1, p. 556; (Natl. Dispens., 5 ed., p. 1375).

Gives an account of his experiences with Cascara Sagrada.

Wright, T. L.

1884.

Cascara Sagrada in Constipation of Old People.

Med. Rev., 3; (West. Drugg., v. 6, p. 167.)

Discusses the use of cascara in constipation under the above conditions.

(Editor)

1885.

Cascara Sagrada.

West. Drugg., v. 7, p. 155.

Compares cascara with other Rhamnus barks and states the uses of drug and how to obtain best results.

(Editor)

1885.

Medicinal Properties of Rhamnus Purshiana and Rhamnus Carthartica.

Am. Drugg. & Pharm. Rec., v. 14, p. 186.

Compares action of the two Rhamnus Barks.

Kennedy, G.W.

1885.

On the Medicinal Properties of Two Rhamnus Barks.

Am. Jour. Pharm., 57, p. 496; (Proc. Am. Pharm. Assoc., 33, p. 498; *ibid.*, 45, p. 201).

Compares the bark of Rhamnus Purshiana and Rhamnus Cartharticus in action, taste and chemical properties.

Limousin, M.

1885.

Note sur l'ecoree de cascara sagrada.

Journ. d. Pharm. et d. Chim., v. 120, p. 80; (Proc. Am. Pharm. Assoc., 45, p. 201; Am. Jour. Pharm., 57, p. 205; Proc. Am. Pharm. Assoc., 52, p. 289; Am. Jour. Pharm., 60, p. 87; West. Drugg., 17, p. 326; Pharm. Journ. 15, p. 615.)

Gives habitat, for whom named, constituents and uses of the drug.

Reid, G.

1885.

Cascara Sagrada.

Br. Med. Jour., 1, p. 742. (Drugg. Circ., 29, p. 157.)

Gives use of cascara and dose to be taken.

Wilttrout, I.D.

1885.

(Rhamnus Purshiana).

Am. Journ. Pharm., 57, p. 498.

Gives uses of Rhamnus purshiana and compares strength with that of Rhamnus catharticus.

(Editor)

1886.

Cascara Sagrada.

Yrbk. Br. Pharm. Conf., 23, p. 168. (Proc. Am. Pharm. Assoc., v. 52, p. 290.)

Mentions the superiority of Cascara over other vegetable cathartics and tells how to obtain best results from the remedy.

(Editor)

1886.

(Cascara Sagrada).

Edinb. Med. Jour., 31, p. 923. (Natl. Dispens., 5 ed., p. 1375.)

The original was not available.

"Oakland"

1886.

Notes From the Coast.

West. Drugg., v. 8, p. 125.

Cascara is mentioned as having crystals, obtained by sublimation on a mercury bath.

Wenzell, W.T.

1886.

Active Principles of Rhamnus Purshiana.

Pharm. Rundt., 4, p. 79. (Proc. Am. Pharm. Assoc., 34, p. 462; Proc. Am. Pharm. Assoc., 45, p. 20; Proc. Am. Pharm. Assoc., 52, p. 289; Am. Jour. Pharm. 58, p. 252; Am. Jour. Pharm., 60, p. 87; West. Drugg., 11, p. 326.)

Gives an account of the isolation of a distinct crystalline principle from cascara.

Wood, G.B., Remington, J.P. & Sadtler, S.P.

1886.

Cascara Sagrada. Sacred Bark.

U.S. Dispens., 15 ed., p. 1600.

Briefly describes the drug, its constituents, and medicinal properties.

Butterfield, F.V.

1887.

Dispensing Memoranda.

Pharm. Jour., 18, p. 473; (Proc. Am. Pharm. Assoc., v. 45, p. 201; Am. Jour. Pharm., 60, p. 90.)

Tells of popularity of extract of cascara sagrada and how to prescribe it.

(Editor)

1887.

Rhamnaceae.

Am. Drugg., 16, p. 61. (Proc. Am. Pharm. Assoc., 35, p. 174).

Gives difference between Rhamnus Purshiana and Rhamnus Frangula.

(Editor)

1887.

Cascara Sagrada.

Pharm. Rec., v. 7, p. 221.

Gives a description of the drug.

Post, A.E.

1887.

Cascara Sagrada.

Drugg. Circ., v. 3, p. 88.

Discusses the uses of Cascara Sagrada.

Schrenk, J.

1887.

Rhamnus Purshiana.

Am. Drugg. & Pharm. Rec., v. 16, p. 61.

Gives an account of the structure of the bark of Rhamnus Purshiana.

Squibb, E.R.

1887.

Cascara Sagrada.

Ephermis, Oct., pp. 984 & 1243; (Proc. Am. Pharm. Assoc., 36, p. 403; Am. Jour. Pharm., v. 59, p. 569; Am. Jour. Pharm., 72, p. 312.)

Gives habitat and use of cascara, best methods of administration and compares it with buckthorn bark.

Catter, R.O. 1888.

Severe Effects of Cascara Sagrada.

Therap. Gaz., 12, p. 285; (Natl. Dispens., 5 ed., p. 1375).

Tells of activity of the drug.

Eccles, R.G. 1888.

An Alkaloid in Cascara.

Drugg. Circ., 32, p. 54. (King's Am. Dispens., 18 ed., 3 rev., v. 2, p. 1654; Prac. Am. Pharm. Assoc., 36, p. 402; Prac. Am. Pharm. Assoc., 45, p. 201; West. Drugg., 11, p. 326.)

Tells of the discovery of an alkaloid in Cascara.

Grazer, F.A. 1888.

Tasteless Extract of Cascara Sagrada.

Pharm. Jour., 47, p. 745. (Am. Journ. Pharm., 61, p. 186; Drugg. Circ., 54, p. 634.)

Tells how to make an extract of Cascara devoid of bitter principle.

Grazer, M. 1888.

Cascara Sagrada.

Drugg. Circ., 32, p. 54; (Proc. Am. Pharm. Assoc., 36, p. 402.)

Claims that he obtained an alkaloid from Cascara.

Hooper, D. 1888.

Bark of Rhamnus Wightii.

Pharm. Jour., 47, p. 681. (U.S. Dispens., 19 ed., p. 1058).

Compares the barks of Rhamnus Purshiana and Rhamnus Wightii and gives their uses.

Irving, J.

1888.

Ways of Improving Taste of Cascara Preparations.

Brit. Med. Jour. 1, p. 87; (Am. Drugg. & Pharm. Rec., 17, p. 226; *ibid.*, 18, p. 14.)

Gives ways of improving the taste of cascara preparations.

Meier, H.F. & Webber, J.L.R.

1888.

An Examination of Cascara Sagrada.

Am. Jour. Pharm., v. 60, p. 87. (Proc. Am. Pharm. Assoc., v. 45, p. 201; Am. Jour. Pharm., 61, p. 186; Proc. Am. Pharm. Assoc., 52, p. 289; U.S. Dispens., 19 ed., p. 1058; U.S. Dispens., 20 ed., p. 302; Pharm. Rec., v. 8, p. 60, West. Drugg., 11, p. 326.)

Gives constituents, action of cascara and differences between the young and old bark.

Schwabe, P.

1888.

Ueber die Chemischen Bestandteile von Cortex Frangulae (Rhamnus Frangula) und Cascara Sagrada (Rhamnus Purshiana).

Archiv. d. Pharm., 126, p. 569; (King's Am. Dispens., 18 ed., 3 rev., v. 2, p. 1655; U.S. Dispens., 20 ed., p. 302; Proc. Am. Pharm. Assoc., 36, p. 402; Proc. Am. Pharm. Assoc., 45, p. 199; Proc. Am. Pharm. Assoc., 52, p. 290; West. Drugg., 11, p. 326.)

Gives habitat, chemistry, constituents and uses of the drug.

Squibb, E.R.

1888.

Rhamnus vs. Cascara.

Drugg. Circ., v. 32, p. 1.

Compares rhamnus frangula and cascara and gives advantages of cascara.

Von Grazer, F.

1888.

Bitterless Cascara Sagrada.

Pharm. Rund., v. 6, p. 9.

Tells how to make a bitterless fluidextract of cascara.

Wright, R.

1888.

Tasteless Liquid Extract of Cascara Sagrada.

Chem. & Drugg., 33, p. 330. (Am. Drugg. & Pharm. Rec., 17, p. 206.)

Tells how to make a tasteless preparation of cascara.

Beckett, F.A.

1889.

Cascara Sagrada.

Pharm. Era, v. 3, p. 132.

Tells of increasing demand for cascara, gives reasons for high price, describes tree and treats on medicinal properties.

(Editor)

1889.

Cascara Sagrada.

Pharm. Rec., v. 9, p. 8.

Gives an account of the action of cascara.

(Editor)

1889.

True and False Cascara.

Drugg. Circ., v. 33, p. 74.

Tells of adulterating cascara bark and how to identify the drug and the adulterants.

(Editor)

1889.

Cortex Cascara Sagrada.

Pharm. Rund., (N.Y.) 7, p. 119.

Gives habitat and uses of drug and compares it with Rhamnus Frangula.

Findlay, J.

1889.

Extractum Cascarae Sagradae Liquidum.

Pharm. Jour., 20, p. 491; (Proc. Am. Pharm. Assoc., 45, p. 201.)

Gives directions for making the extract of cascara sagrada.

Fuge, H.G.

1889.

Notes on Cascara Sagrada.

Pharm. Jour., 49, p. 736; (Am. Jour. Pharm., 61, p. 184.)

Gives official preparations in Br.P. and how prepared and the best way to make an extraction of the bark also how to mask the bitter taste.

Moss, J.

1889.

Cascara Sagrada.

Drugg., Circ., v. 33, p. 80.

Warns of spurious cascara on the market and reasons for shortage and high price of the original. Also gives description of true cascara.

"Nemo."

1889.

Cascara Sagrada.

Pharm. Era, 3, p. 154.

In a letter to the editor, describes the bark, means of curing and how to tell true bark.

Schoellkopf, Hartford & MacLagan, Limited.

1889.

Commercial Notes on Cascara Sagrada.

Chem. & Drugg., 34, p. 407; (Am. Drugg. & Pharm. Rec., v. 18, p. 85.)

Gives source of supply, use, rate of consumption, available stock and raise in price of cascara.

Vance, E.T. 1889.

Notes on Cascara Sagrada.

Pharm. Rec., v. 9, p. 52.

Gives properties, uses and constituents of cascara.

Zeig, A.C. 1889.

Active Constituents of Rhamnus Purshiana.

Proc. Am. Pharm. Assoc., 37, p. 261. (Proc. Am. Pharm. Assoc., v. 52, p. 290.)

Gives habitat, action, uses, constituents and preparations of Cascara Sagrada.

(Editor) 1890.

Active Principles of Cascara Sagrada.

Drugg. Circ., v. 34, p. 40.

Lists the constituents of Cascara Sagrada.

(Editor) 1890.

Adulteration and Sophistication of New Drugs.

Am. Drugg. & Pharm. Rec., v. 19, p. 51.

Mentions other drugs usually used in the adulteration of Cascara Sagrada.

Rusby, H.H. 1890.

Cascara Sagrada and its Allies.

Proc. Am. Pharm. Assoc., 38, p. 206; (U.S. Dispens., 19 ed., p. 1058; U.S. Dispens., 20 ed., p. 300; Pharm. Rev., 26, p. 214.)

Gives a lengthy account of Cascara Sagrada and compares it with various other Rhamnus barks, also giving illustrations.

Jardine, J. & Edin, C.M.

1891.

Report on the Action of Some Preparations of Cascara Sagrada, Liquid and Solid, Received from Mr. John Moss, F.I.C., F.C.S.

Yrbk. Br. Pharm. Conf., 28, p. 482; (Proc. Am. Pharm. Assoc., 52, p. 290.)

Tells of the various actions of the drug in different forms as prepared by J. Moss.

Maisch, J.M.

1891.

Rhamnus Purshiana.

Am. Jour. Pharm., 63, p. 72.

Gives various properties of Rhamnus Purshiana.

Moss, J. & Jardine, J.

1891.

Cascara Sagrada and Extracts with Special Reference to Question 8 on the Blue List.

Yrbk. Br. Pharm. Conf., 28, p. 476; (Proc. Am. Pharm. Assoc., 52, p. 290; Drugg. Circ., 35, p. 246.)

Explains how to make the Liquid Extract according to the British Pharmacopoea and gives the dose of various preparations also actions and conclusions drawn from experiments with the drug.

Sargent, C.S.

1891.

Rhamnus Purshiana.

Silva of North America, 2, p. 37.

Gives a history and description of the tree together with numerous bibliographical references.

Le Prince, M.

1892.

Cascara Sagrada.

Compt. Rend., 115, p. 286; (Proc. Am. Pharm. Assoc., 45, p. 199; Proc. Am. Pharm. Assoc., 41, p. 692; U.S. Dispens., 19 ed., p. 1058; U.S. Dispens., 20 ed., p. 302.)

Describes what he thinks is the active principle of the bark.

Stephns, L.F. 1893.

Cascara as a Taenifuge.

Therapeutische Monatshefte, 7, p. 257; (Bull. Pharm., 7, p. 325.)

Gives a formula, a preparation and dose of remedy to be used as taneifuge.

(Editor) 1894.

Cortex Rhamni Purshiani.

Bull. Pharm., v. 8, p. 17.

Tells how cascara enters into commerce and how to tell the adulterated bark.

Hey, M. 1894.

Cascara as a Diuretic.

Bull. Pharm., v. 8, p. 505.

Discusses other uses of cascara than a purgative.

Stille, A., Maisch, J.M., & Caspari, C. 1894.

Rhamnus Purshiana U.S. Cascara Sagrada.

Natl. Dispens., 5 ed., p. 1375; (Am. Jour. Pharm., 72, p. 312.)

Gives brief description of origin, constituents, of Cascara, allied drugs, action and uses.

(Editor) 1896.

Cascara in Migraine.

Drugg. Circ., 40, p. 12.

Discusses the use and dose of Cascara to ward off attack of migraine.

Gilpin, H.B.

1896.

Bitterless Cascara Sagrada.

Drugg. Circ., v. 40, p. 83.

Gives a formula for making bitterless Cascara preparations.

Lloyd, J.U.

1896.

History and Names of Rhamnus Purshiana.

Proc. Am. Pharm. Assoc., 44, p. 198; (Am. Jour. Pharm., 96, p. 400.)

Gives the history and names of Rhamnus Purshiana and gives credit to various men for bringing the attention of Rhamnus to physicans, pharmacists, botanists and medical profession.

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

1897.

Hot Water Extract of Cascara.

Proc. Am. Pharm. Assoc., v. 45, p. 198; (King's Am. Dispens., 18 ed., 3 rev., v. 2, p. 1654; Origin & Hist. Pharm. Veg. Drugs, Chem. & Prep., v. 1, p. 267.)

Discusses hot water extract of Cascara, dilute alkali extract and the glucosides of Cascara.

Sayre, L.E.

1897.

Frangula and Cascara Barks.

Am. Jour. Pharm., 69, p. 126; (U.S. Dispens., 19 ed., p. 1058; U.S. Dispens., 20 ed., p. 300.)

Tells how to distinguish between the various Rhamnus Barks. Microscopic sections of barks are also given.

Stevens, L.F.

1897.

Experiments with Cascara Sagrada.

Am. Drugg. & Pharm. Rec., v. 37, p. 69; (Pharm. Era, v. 18, p. 298; Proc. Am. Pharm. Assoc., 46, p. 867.)

Gives uses of cascara and results of various experiments carried on with the drug.

Dohme, A.R.L. & Engelhardt, H. 1898.

The Bitter Principle of Cascara Sagrada.

Proc. Am. Pharm. Assoc., 46, p. 340; (U.S. Dispens., 19 ed., p. 1058; U.S. Dispens., 20 ed., p. 302; Origin & Hist. Pharm. Veg. Drugs, Chem. & Prep. v. 1, p. 267; Proc. Am. Pharm. Assoc., v. 52, p. 313; Bull. Pharm. v. 12, p. 509.)

Treats on how the bitter principle of Cascara was isolated and the changes it undergoes when treated with magnesia and dilute acids.

(Editor) 1898.

Lichens - Characteristic Species Growing on Cascara Bark.

Proc. Am. Pharm. Assoc., 46, p. 771; (Bull. Pharm., 12, p. 172.)

Describes three kinds of lichens as characteristic on Cascara Bark.

Felter, H.W. & Lloyd, J.U. 1898.

Extractum Rhamni Purshianae Fluidum Aromaticum.

(N.F.) Aromatic Fluid Extract of Rhamnus Purshiana; King's Am. Dispens., 18 ed., 3 rev., v. 1, p. 824.)

Gives process of making the fluidextract, medical uses and doses. Also gives names under which it is sold.

Jelliffe, S.E. 1899.

Microscopical Characteristics of Powdered Cascara.

Drugg. Circ., v. 43, p. 51.

Gives habitat, description, uses and microscopical characteristics of the drug.

Aweng, E.

1900.

Glucosides of Cascara Sagrada.

Am. Drugg. & Pharm. Rec., 37, p. 104; (Proc. Am. Pharm. Assoc., 48, p. 837.)

Tells of two glucosides in Cascara and how to extract them.

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

1900.

Cascara Sagrada.

Am. Drugg. & Pharm. Rec., 38, p. 322.

Gives constituents and action of drug.

(Editor)

1900.

Cascara in Chronic Constipation.

Bull. Pharm., v. 14, p. 518.

Discusses the use of Cascara in chronic constipation and describes the best methods of taking it.

(Editor)

1900.

Cascara Sagrada.

Am. Drugg. & Pharm. Rec., 37, p. 343.

Gives habitat and market for the drug.

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

1900.

Rhamnus Purshiana (U.S.P.) Cascara Sagrada.

King's Am. Dispens., 18 ed., 3 rev., v. 2, p. 1654.

Gives botanical source, history of the drug, synonyms, description, chemical composition, action, uses and dosage.

Squibb, E.R.

1900.

The Official Varieties of Rhamnus of the U.S.P.

Am. Jour. Pharm., 72, p. 311.

Gives use of cascara and compares it with Frangula bark.

(Editor)

1901.

Cascara and Birekthorn Compared.

West. Drugg., 23, p. 25.

Compares them as to dose, use and action.

Haensel, H.

1901.

Cascara Sagrada.

Apoth. Zeit., 16, p. 754; (Proc. Am. Pharm. Assoc., 52, p. 295).

Tells how to extract the bark.

Laws, O.S.

1901.

Green Versus Dry Drugs.

Pharm. Era, 25, p. 143.

Explains how drying of drugs affects their strength.

Perrot, E.

1901.

La poudre de Cascara et sa falsification par la poudre d'ecorce de Bourdaine.

Jour. d. Pharm. et d. chim., 152, p. 161; (Proc. Am. Pharm. Assoc., 49, p. 74; Bull. Pharm., 15, p. 74.)

Explains how to tell when Cascara Bark is adulterated with Frangula Bark.

White, E. & Rabinson, R.A.

1902.

Tasteless Cascara Sagrada Preparations.

West. Drugg., 24, p. 496; (U.S. Dispens., 19 ed., p. 1058; Am. Jour. Pharm., 74, p. 571; Yrbk. Br. Pharm. Conf., 39, p. 420; Proc. Am. Pharm. Assoc., 52, p. 307.)

Tells how to remove the bitter principles of cascara by means of certain alkalies.

(Editor)

1903.

The Rise of Cascara.

Pharm. Era, 30, p. 305.

Tells of the rise in price of bark and gives reasons, together with advances in price during various periods.

Jawett, H.A.D. & Potter, C.E.

1903.

The Constitution of Chrysophanic Acid and of Emodin.

Jour. Chem. Soc., (London), 83, p. 1327; (Proc. Am. Pharm. Assoc., 52, p. 293.)

Gives the composition of chrysaphanic acid and of emodin.

(Editor)

1904.

Tablets of Cascara Sagrada.

Bull. Pharm., 18, p. 131.

Gives formulas for tablets of cascara.

Jowett, H.A.D.

1904.

Chemical Examination of Cascara Bark.

Proc. Am. Pharm. Assoc., 52, p. 288; (U.S. Dispens., 19 ed., p. 1058; U.S. Dispens., 20 ed., p. 302.)

Gives a lengthy account of the constituents of Cascara various extracts and chemical analysis made by numerous men.

Nelson, B.E.

1904.

Notes on the Pharmacology of Cascara Sagrada and Bitterless Preparations of Cascara.

Proc. Am. Pharm. Assoc., 52, p. 313; U.S. Dispens., 19 ed., p. 1058; Am. Drugg. & Pharm. Rec., 45, p. 260.)

Deals with an analysis of the drug and with various solvents, gives constituents, and apparatus used in isolating principles.

Brown, J.L. 1905.

Cascara Bark-Method of Gathering and Curing in Oregon.

West. Drugg., 27, p. 701; (Proc. Am. Pharm. Assoc., 54, p. 794.)

Tells how bark is collected and cured.

Graff, J.E. 1905.

Cascara, An Important Product of the Country of Lewis and Clark.

Am. Drugg. & Pharm. Rec., 47, p. 264.

Gives history, pharmacognosy, chemical composition, pharmacology and preparations of Cascara.

Webster, H.T. 1905.

Cascara Sagrada.

Eclec. Med. Jour., 66, p. 116.

Describes cascara and its uses and warns against its use in rheumatism.

Zeig, A.C. 1905.

Cascara Bark - Habitation, Collection, Supply.

Pharm. Era, 33, p. 150;(Proc. Am. Pharm. Assoc., 54, p. 794).

Gives habitat, collection and supply of the bark with the various kinds in different places.

(Editor) 1906.

Bitterless Purgative from Cascara.

Am. Drugg. & Pharm. Rec., v. 49, p. 336.

Discusses the active constituents of drug and speaks of a bitterless principle.

Wood, H.C., Remington, J.P. & Sadtler, S.P. 1907.

Rhamnus Purshiana U.S. (Br.) Cascara Sagrada.

U.S. Dispens., 19 ed., p. 1057.

Discusses the kinds of bark, uses, medicinal properties and gives official preparations of U.S.P. and Br.P.

Hager, H. 1908.

Rhamnus Purshiana. D.C.

Pharm. Praxis, v. 2, p. 727; (Am. Jour. Pharm., v. 57, p. 165.)

Gives the habitat of the plant.

Quant, E. 1908.

Tasteless Liquid Extract of Cascara Sagrada.

Am. Jour. Pharm., 80, p. 524.

Tells how to make tasteless liquid extract of Cascara.

(Editor) 1909.

Great Demand in East for Oregon Chittem Bark.

Pac. Drug. Rev., 21, p. 65.

Tells where most cascara bark is shipped and how 90,000 lbs. came from London after being shipped from U.S.

(Editor) 1909.

The Cultivation of Cascara Sagrada.

Am. Drugg. & Pharm. Rec., v. 55, p. 192.

Speaks of cultivation of Cascara in different countries.

(Editor) 1909.

Oregon Holds No Monopoly on Cascara Sagrada.

Pac. Drug. Rev., v. 21, p. 70.

Cascara is a product of various places other than Western Oregon.

True, R.H. & Klugh, G.F. 1909.

The Cultivation of Cascara Sagrada.

Proc. Am. Pharm. Assoc., 57, p. 824.

Discusses the cultivation of Cascara and under what conditions it thrives best.

Tschirch, A. 1909.

Bitterless Cascara.

(Bull. Pharm., v. 23, p. 37.)

Tells how to extract bitter principle of Cascara.

Alcock, F.H. 1910.

Cascara Sagrada-Yellow Volatile Constituent.

Proc. Am. Pharm. Assoc., 58, p. 218.

A brief description of a yellow volatile constituent found in Cascara.

Pietsch, P. 1910.

Ueber Peristaltin.

Therap. Monatsh., 24, p. 35; (U.S. Dispens., 20 ed., p. 302.)

Discusses the water soluble glucosides of cascara.

Bartholow, J. 1911.

(Cascara Sagrada).

Materia Medica & Therapeutics, p. 69; (Am. Journ. Pharm., 60, p. 88.)

Explains results of large doses of Cascara Sagrada.

Diehl, C.L.

1912.

Cascara Sagrada.

Jour. Am. Pharm. Assoc., 1, p. 362.

Explains how to identify Cascara by Pyro analysis.

(Editor)

1912.

Cascara Sagrada(Rhamnus Purshiana).

Drugg. Circ., 56, p. 133.

Gives habitat of cascara, uses and its cultivation in other places, also two illustrations of trees three and five years old.

Kraemer, H.

1912.

The Medullary Ray Cells in Rhamnus Purshiana.

Am. Jour. Pharm., 84, p. 385.

Explains how to tell Rhamnus Purshiana by Medullary rays, giving a double page plate of a section thru the bark.

Miller, F.A.

1912.

Adulteration of Cascara Sagrada.

Jour. Am. Pharm. Assoc., 1, p. 1207.

Discusses the adulteration of cascara bark and how it is being done, also gives three plates comparing cascara with substances used in the adulteration.

Bean, W.J.

1913.

Cascara Sagrada - Culture Experiments in British Isles.

Kew. Bull., 3, p. 123; (Chem. & Drugg., 82, p. 752; Yrbk. Am. Pharm. Assoc., 2, p. 257.)

Gives results of experimental work in growing Rhamnus purshiana in the British Isles.

Daels, A.

1913.

Chemistry of Cascara.

Bull. Acad. roy. med. Belg., s. 4, 27, p. 350; (Jour. Am. Pharm. Assoc., 13, p. 254.)

Tells how to extract the drug.

Holm, T.

1913.

Rhamnus Purshiana - Diagnostic Characters of the Root, Stem, and Leaf of the Plant.

Merck's Rep., 22, p. 232-235; (Yrbk. Am. Pharm. Assoc., v. 2, p. 508.)

Describes root, stem and leaf of the plant giving sixteen illustrations.

S --, G.T.

1913.

One Hundred Thousand Laxative Tablets a Year.

Bull. Pharm., 27, p. 207.

Tells of taking cascara in tablet form and the increase in popularity of this method of administration.

True, R.H.

1913.

Cascara Sagrada.

Pharm. Era, 46, p. 9.

Tells of early use of cascara, gives geographical sources of bark and botanical source of drug together with the prices of the drug between 1901 and 1907 inclusive.

(Editor)

1914.

Cascara Sagrada Adulterants.

Pharm. Era, 47, p. 27.

Discusses how Rhamnus Barks are adulterated with an unknown substance.

Farwell, O.A.

1914.

The Medullary Ray Cells in *Rhamnus Purshiana* and in *Rhamnus Californica*.

Jour. Am. Pharm. Assoc., 3, p. 649; (Yrbk. Am. Pharm. Assoc., 3, p. 266; U.S. Dispens., 20 ed., p. 301.)

Compares *Rhamnus Purshiana* and *Rhamnus Californica* as to structure and tells of cultivation of *Rhamnus Purshiana* in various places.

Gathercoal, E.N.

1914.

A Criticism of the Chemical Tests for *Frangula* and *Rhamnus Purshiana* as Proposed for the New U.S.P.

Journ. Am. Pharm. Assoc., 3, p. 982.

Gives drugs whose tests are identical with cascara in certain cases and criticizes various tests as given by the U.S.P. IX.

Johnson, C.W. & Hindman, Edith

1914.

Rhamnus Purshiana: History, Growth, Methods of Collection and Bibliography.

Am. Jour. Pharm., 86, p. 387; (U.S. Dispens., 20 ed., p. 300).

Gives an account of the discoverer of the use of the bark, growth, cultivation, collection, cure, price and production, description and microscopical examination of the bark together with numerous illustrations.

Smith, J.D.

1914.

Cascara Sagrada.

Eclec. Med. Jour., 74, p. 572.

Gives uses of cascara and best doses to administer.

Gathercoal, E.N.

1915.

The Pharmacognosy of the Medicinal *Rhamnus* Barks.

Jour. Am. Pharm. Assoc., 4, p. 65. (U.S. Dispens., 20 ed., p. 300.)

Gives habitat, history, time of collection, chemistry and use of the drugs.

Kroeber, L. 1915.

Rhamnus Barks.

Apoth. Ztg., 30, p. 605; (Yrbk. Am. Pharm. Assoc., 4, p. 150.)

Gives methods of distinguishing Cascara Sagrada from other drugs.

Tunnman, O. 1915.

Evolution of Cascara Barks.

Apoth. Ztg., 30, p. 493; (Yrbk. Am. Pharm. Assoc., 4, p. 150; Drug. Circ., 59, p. 799.)

Gives constituents of and compares the Rhamnus Barks.

Barntraeger, G.D. 1917.

Emodin-Bearing Drugs.

Jour. Ind. & Eng. Chem., 9, p. 518; (Yrbk. Am. Pharm. Assoc., 6, p. 196.)

Gives tests for emodin bearing drugs and how to identify Cascara.

Blair, T.S. 1917.

Cascara.

Botanic Drugs, p. 121.

Gives required age of bark before use, also medicinal uses of Cascara.

Remington, J.P. & Wood, H.C. Jr. 1918.

Cascara Sagrada U.S., Br.

U.S. Dispens., 20 ed., p. 300.

Description of bark and means of distinction between other

closely resembling barks, an account of the properties and uses of the preparations of the U.S.P. and Br.P. and a description of the tree are given.

Westman, L.E. & Rowats, R.M. 1918.

Cascara Sagrada - Manganese Content of Drug Ash.

Jour. Am. Chem. Soc., 40, p. 558; (Yrbk. Am. Pharm. Assoc., 7, p. 218.)

Gives the manganese content of various drugs including cascara and establishes a manganese number for the same.

Cooper, Zada M. 1919.

History of Cascara Sagrada.

Am. Drugg. & Pharm. Rec., 67, pp. 202, 251; (Yrbk. Am. Pharm. Assoc., 8, p. 25.)

Gives history of the drug and for whom named.

Schneider, A. 1920.

Rhamnus Purshiana.

Jour. Am. Pharm. Assoc., v. 9, p. 1148.

Explains how to make a micro analytical test of Cascara Bark.

(Editor) 1921.

Cascara Sagrada.

Am. Drugg. & Pharm. Rec., 69, p. 42.

Gives habitat, cultivation and uses of cascara.

(Editor) 1921.

Culture of Cascara Sagrada in Scotland.

Chem. & Drugg., 94, p. 151; (Yrbk. Am. Pharm. Assoc., 10, p. 222.)

Tells of the introduction of Cascara into Scotland and of the progress in growth of the tree.

Lloyd, J.U.

1921.

Rhamnus Purshiana (Cascara Sagrada).

Origin & Hist. Pharm. Veg. Drugs, Chems. & Preps., v. 1, p. 263.

Gives description, history, properties and habitat of the drug, also three illustrations.

McGuigan, J.

1921.

Action of Cascara Sagrada.

Jour. Am. Med. Assoc., 76, p. 513; (Yrbk. Am. Pharm. Assoc., 10, p. 222.)

Discusses the action of cascara in large and small doses.

Anon.

1922.

Cascara Sagrada Glucosides.

Pharm. Ztg., 67, p. 803; (Jour. Pharm. Belg., 4, p. 854; Yrbk. Am. Pharm. Assoc., 11, p. 330.)

Explains how to remove bitter principles of Cascara.

Couch, J.F.

1922.

Rate of Extraction of Cascara Sagrada.

Am. Jour. Pharm., 94, p. 168.

Explains how to extract various principles of Cascara.

Eaton, E.O.

1922.

Note on the Emodin Content of Aromatic Fluid Extracts of Cascara Sagrada.

Jour. Am. Pharm. Assoc., 11, p. 22.

Explains of presence of emodin in cascara and gives tests for it.

(Editor)

1923.

Oregon Harvests Cascara Crop.

Pharm. Era, 57, p. 78.

Gives geographical source of cascara, time of collection, origin of name, and how to obtain superior bark.

(Editor)

1923.

Why Cascara Prices are High.

Pharm. Era, 56, p. 643.

Gives reasons for high price of Cascara Sagrada.

Holmes, E.M.

1923.

Cascara Sagrada.

Pharm. Jour., 110, p. 314; (Yrbk. Am. Pharm. Assoc., v. 12, p. 102.)

Discusses the habitat of the plant and desirability of cultivating it in other places.

Nitardy, F.W.

1923.

Some Notes on Extract of Cascara and Cascara Extraction.

Jour. Am. Pharm. Assoc., v. 12, p. 495.

Gives methods of extracting cascara and how experiments were tried for the removal of the bitter principle.

Clark, R.H. & Gillie, K.B.

1924.

The Cascara Contents of the Wood and Bark of Rhamnus Purshiana.

Am. Jour. Pharm., 96, p. 400.

Gives habitat, constituents and methods of extraction of Rhamnus Purshiana.

Day, W.B.

1924.

Botany of Cascara.

Jour. Am. Pharm. Assoc., 13, p. 253.

Discusses early history of Cascara, its discovery, habitat, use, care and preparation for shipping.

(Editor)

1924.

Cascara Sagrada.

Inland Rev. Dept., 386; (Am. Jour. Pharm., 96, p. 402).

The original was not available.

Fantus, B.

1924.

Therapeutics of Cascara.

Jour. Am. Pharm. Assoc., 13, p. 255.

Gives date of entrance of cascara into medical world and discusses the popularity of the drug. Also gives uses and action of Cascara.

Gathercoal, E.N.

1924.

Pharmacognosy of Cascara.

Jour. Am. Pharm. Assoc., 13, p. 254.

Compares cascara with other Rhamnus barks and compares the fresh and aged barks.

Maskell, E.K.

1924.

Gathering the Bark of the Cascara.

Bull. Pharm., 38, p. 74.

Describes the tree, gives its habitat, describes the bark and tells how it is obtained.

Warren, L.E.

1924.

Chemistry of Cascara.

Journ. Am. Pharm. Assoc., 13, p. 254.

Classifies cascara and gives habitat together with chemical constituents.

(Editor)

1925.

Cascara Sagrada.

Eclec. Med. Jour., 85, p. 167.

Gives derivation of the name, by whom identified and the name it is now known by.

Webster, H.T.

1925.

Dr. Bundy's Remedies.

Eclec. Med. Jour., 85, p. 167.

Gives Dr. Bundy credit for bringing cascara into the eyes of the medical profession. Also discusses the use of cascara.

UNITED STATES PHARMACOPOEIA

1820-1920 (I-X revision)

HISTORY

OF

RHAMNUS PURSHIANA

U.S.P. 1890 - p. 339.

Rhamnus Purshiana

Cascara Sagrada

The bark of Rhamnus Purshiana De Candolle (nat. ord. Rhamnaceae.)

In quills or curved pieces, about 3 to 10 cm. long, and about 2 Mm. thick, / outer surface brownish-gray and whitish; the young bark having numerous, / rather broad, pale colored warts; inner surface yellowish to light brownish, / becoming dark brown by age; smooth or finely striate, fracture short, yellow- / ish, in the inner layer of thick bark somewhat fibrous; inodorous, taste / bitter.

Preparation: Extractum Rhamni Purshiana Fluidum. /

U.S.P. 1900 - p. 382.

Rhamnus Purshiana

Cascara Sagrada

The dried bark of Rhamnus Purshiana De Candolle (Fam. Rhamnaceae), / collected at least one year before being used. /

In quills or curved pieces, of variable length and 1 to 5 Mm. thick; outer / surface reddish-brown, frequently more or less covered with grayish or whitish / lichens, several of which are peculiar to this bark, and with small groups of / their brownish fruit-heads; inner surface yellowish to light brownish, becoming / dark brown with age and reddened by alkalis, longitudinally striate; fracture / short with projec-

tions of bast fibres in the inner bark, and the medullary rays/ forming converging groups; odor distinct; taste bitter and slightly acid./

Average Dose - 1 Gm. (15 grains).

U.S.P. 1910 - p. 103.

CASCARA SAGRADA

Cascara Sagrada

Casc. Sagr. - *Rhamnus Purshiana*, U.S.P. VIII.

The dried bark of the trunk and branches of Rhamnus Purshiana De/ Candolle (Fam. Rhamnaceae)./

Usually in flattened or transversely curved pieces, occasionally in quills;/ bark from 1 to 5 mm. in thickness; outer surface dark brown or brownish red,/ longitudinally ridged, often nearly covered with grayish or whitish lichens/ bearing small blackish apothecia, sometimes with numerous lenticels, and/ occasionally with mosses; inner surface light yellow, light brown, or reddish-/ brown, longitudinally striate, turning red when moistened with solutions of/ the alkalies, fracture short, with projections of bast fibers in the inner bark;/ in cross section inner bark shows diagonal or curved medullary rays, forming/ converging groups the outer bark showing yellowish groups of stone cells which/ are especially apparent on moistening the freshly cut surface with phloroglucinol/ T.S. and hydrochloric acid; odor distinct; taste disagreeable, bitter and slightly/ acid./

Under the microscope, a transverse section of Cascara Sagrada shows an outer/yellowish-brown or reddish-brown corky layer consisting of 10 to 15 or more/ rows of cells; stone cells, in outer bark in tangentially elongated groups of 20/ to 50 cells, the walls being very thick and finely lamellated; medullary rays 1/ to 4 cells wide, 15 to 25 cells deep, the contents being colored red upon the addition of solutions of the alkalies to the sections; bast fibers with individual crystals from 0.008 to 0.015/ Mm. in length; parenchyma with spheroidal starch grains about 0.003 to 0.008/ Mm. in diameter, or with calcium oxalate either in rosette aggregates or prisms/ from 0.01 to 0.02 Mm. in diameter./

Add 0.1 Gm. of powdered Cascara Sagrada to 10 mils of hot water, shake/ the mixture occasionally until cold, filter it and add sufficient water to make/ 10 mils on the addition of 10 mils of ammonia water to this liquid, it is colored/ an orange yellow./

Macerate 0.1 Gm. of powdered Cascara Sagrada with 10 drops of alcohol,/ boil the mixture with 10 mils of water, when cold filter it and shake the filtrate/ with 10 mils of ether; a yellow ethereal solution separates. Shake 3 mils of this/ ethereal solution with 3 mils of ammonia water; the separated ammoniacal/ solution still possesses, on diluting with 20 mils of water, a distinct, yellowish-red/ color./

The powder is light brown to olive brown showing characteristic elongated/ groups of bast-fibers associated with crystal fibers, the crystals in the latter/ being in the form of monoclinic prisms from 0.008 to 0.015 mm. in length; stone/ cells in large groups, the cells having thick and finely porous walls; fragments/ of parenchyma and medullary ray cells colored red upon the addition of solu-/tions of the alkalies; starch grains either free or in parenchyma cells, the indi-/vidual grains being somewhat spheroidal, from 0.003 to 0.008 mm. in diameter;/ calcium oxalate in monoclinic prisms or rosette aggregates from 0.01 to 0.02/ mm. in diameter; occasional fragments of reddish-brown cork./

Preparations - Extractum Cascarae Sagrada.

Fluidextractum Cascarae Sagradae/

Fluidextractum Cascarae Sagradae Aromaticum./

Average dose - Metric, 1 Gm. - Apothecaries, 15 grains./

U.S.P. 1920 - p. 101.

CASCARA SAGRADA

Cascara Sagrada

Casc. Sagr. - Rhamnus Purshiana.

Cascara Sagrada is the dried bark of Rhamnus Purshiana De Candolle/ (Fam. Rhamnaceae)./

Note - Cascara Sagrada should be collected at least one year before/ being used for making medicinal preparations./

Description and physical properties./

Underground Cascara Sagrada. - Usually in flattened or transversely curved pieces,/ occasionally in quills; bark from 1 to 5 mm. in thickness, outer surface dark/ brown or brownish-red, longitudinally ridged, with grayish or whitish lichen/ patches, sometimes with numerous lenticles and occasionally with moss; inner/ surface longitudinally striate, light yellow to dark reddish-brown or dark/ brown in old matured bark; fracture short with projections of bast-bundles in/ the inner bark; odor distinct; taste bitter and slightly acid./

Structure - Cork yellowish-brown to reddish-brown, of 10 or more rows of small/ cells; stone cells in yellowish, tangentially elongated groups of 20 to 50 cells;/ medullary rays 1 to 4 cells wide, 15 to 25 cells deep, frequently diagonal or/ curved forming converging groups; bast fibers in small bundles surrounded by/ crystal fibers and located between the medullary rays; parenchyma with/ brown walls and containing starch grains or calcium oxalate./

Powdered Cascara Sagrada - Light brown to olive-brown; consisting of broken/ bast-bundles with accompanying crystal fibers containing monoclinic/ prisms of calcium oxalate; stone cells more or less adhering, with thick, / finely lamellated and porous walls; fragments of reddish-brown cork; masses/ of parenchyma and medullary ray cells, colored red upon the addition of a/ solution of an alkali; starch grains spheroidal, from 0.003 to 0.008 mm. in/ diameter; cal-

cium oxalate in monoclinic prisms or rosette aggregated from/ 0.006 to 0.020 mm. in diameter./

Tests for identity - Add 0.1 Gm. of powdered Cascara Sagrada to 10 cc. of hot/ water, shake the mixture occasionally until cold, filter and add sufficient/ water to make the filtrate measure 10 cc.: this filtrate, on the addition of/ 10 cc of ammonia T.S., is colored an orange-yellow./

Macerate 0.1 Gm. of powdered Cascara Sagrada with 10 drops of alcohol,/ boil the mixture with 10 cc of water, cool, filter, and shake the filtrate with/ 10 cc of ether: a yellow ethereal solution separates. Shake 3 cc. of this ethe-/real solution with 3 cc of ammonia T.S.: the separated ammoniacal solution/ on diluting with 20 cc. of water retains a distinct, yellowish-red color./

Preparations - Extractum Cascarae Sagradae, Fluidextrac-
tum Cascarae Sagradae,/ Fluidextractum Cascarae Sagradae
Aromaticum./

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

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

Cascara Sagrada.

Official in 1890, 1900, '10, '20

Official Latin Titles

Rhamnus Purshiana 1890, 1900

Cascara Sagrada 1910, '20

Official English Titles

Cascara Sagrada 1890, 1900, '10, '20

Official Abbreviations

Casc. Sagr. 1910, '20

Official Synonyms.

Rhamnus Purshiana 1910, '20

Scientific Name.

Rhamnus Purshiana 1890, 1900, '10, '20

Family Name.

Rhamnaceae 1890, 1900, '10, '20

Part Used.

Bark 1890

The dried bark 1900, '20

The dried bark of the trunk and branches 1910

Description.

In quills or curved pieces, about 3 to 10 cm. long, and about 2 Mm. thick; outer surface, brownish-gray and whitish; the young bark having numerous, rather broad, pale colored warts; inner surface yellowish to light brownish, becoming dark brown by age; smooth or finely

striate; fracture short, yellowish in the inner layer of thick bark, somewhat fibrous; inodorous; taste bitter. 1890.

In quills or curved pieces of variable length and 1 to 15 mm. thick; outer surface reddish-brown, frequently more or less covered with grayish or whitish lichens, several of which are peculiar, to this bark and with small groups of their brownish fruit-heads; inner surface yellowish to light brownish, becoming dark brown with age and reddened by alkalies longitudinally striate; fracture short with projections of bast fibres in the inner bark, and the medullary rays forming converging groups; odor distinct; taste bitter and slightly acrid. 1900.

Usually in flattened or transversely curved pieces, occasionally in quills; bark from 1 to 5 mm. in thickness; outer surface dark brown or brownish-red, longitudinally rigid, often nearly covered with grayish or whitish lichens, bearing small blackish apothecia, sometimes with numerous lenticels, and occasionally with mosses; inner surface light yellow, light brown, or reddish-brown, longitudinally striate, turning red when moistened with solutions of the alkalies; fracture short, with projections of bast fibers in the inner bark; in cross section inner bark shows diagonal or curved medullary rays, forming converging groups, the outer bark showing yellowish groups of stone cells which are especially apparent on moistening the freshly cut surface with phloroglucenol T.S. and hydrochloric acid; odor distinct; taste disagreeable, bitter, and slightly acrid.

Under the microscope, a transverse section of Cascara Sagrada shows an outer yellowish-brown or reddish-brown corky layer consisting of 10 to 15 or more rows of cells; stone cells in outer bark in tangentially elongated groups of 20 to 50 cells, the walls being very thick and finely lamellated; medullary rays 1 to 4 cells wide, 15 to 25 cells deep, the contents being colored red upon the addition of solutions of the alkalies to the sections; bast fibers with individual crystals from 0.008 to 0.015 mm. in length; parenchyma with spheroidal starch grains about 0.003 to 0.008 mm. in diameter, or with calcium oxalate either in rosette aggregates or prisms from 0.01 to 0.02 mm. in diameter.

Add 0.1 Gm. of powdered Cascara Sagrada to 10 mils of hot water, shake the mixture occasionally until cold, filter it and add sufficient water to make 10 mils; on the addition of 10 mils of ammonia water to this liquid, it is colored an orange yellow.

Macerate 0.1 Gm. of powdered Cascara Sagrada with 10 drops of alcohol, boil the mixture with 10 mils of water, when cold filter it and shake the filtrate with 10 mils of ether, a yellow ethereal solution separates. Shake 3 mils of this ethereal solution with 3 mils of ammonia water; the separated ammoniacal solution still possesses, on diluting with 20 mils of water, a distinct, yellowish-red color.

The powder is light brown to olive brown showing characteristic elongated groups of bast fibers associated

with crystal fibres, the crystals in the latter being in the form of monoclinic prisms from 0.008 to 0.015 mm. in length; stone cells in large groups, the cells having thick and finely porous walls; fragments of parenchyma and medullary ray cells colored red upon the addition of solutions of the alkalies; starch grains either free or in parenchyma cells, the individual grains being somewhat spheroidal, from 0.003 to 0.008 mm. in diameter; calcium oxalate in monoclinic prisms or rosette aggregates from 0.01 to 0.02 mm. in diameter; occasional fragments of reddish-brown cork. 1910.

Underground Cascara Sagrada. - Usually in flattened or transversely curved pieces, occasionally in quills; bark from 1 to 5 mm. in thickness; outer surface dark brown or brownish red, longitudinally rigid with grayish or whitish lichen patches, sometimes with numerous lenticels and occasionally with moss, inner surface longitudinally striate, light yellow to dark reddish-brown or dark brown in old matured bark; fracture short with projections of bast bundles in the inner bark; odor distinct; taste bitter and slightly acrid.

Structure - Cork yellowish brown to reddish brown of 10 or more rows of small cells; stone cells in yellowish tangentially elongated groups of 20 to 50 cells; medullary rays 1 to 4 cells wide; 15 to 25 cells deep, frequently diagonal or curved forming converging groups; bast fibers in small bundles surrounded by crystal fibers and located between the

medullary rays; parenchyma with brown walls and containing starch grains or calcium oxalate.

Powdered Cascara Sagrada. - Light brown to olive brown; consisting of broken bast bundles with accompanying crystal fibers containing monoclinic prisms of calcium oxalate; stone cells more or less adhering with thick, finely lamellated and porous walls; fragments of reddish-brown cork; masses of parenchyma and medullary ray cells colored red upon the addition of a solution of an alkali; starch grains spheroidal, from 0.003 to 0.008 mm. in diameter; calcium oxalate in monoclinic prisms or rosette aggregates from 0.006 to 0.020 mm. in diameter.

Tests for identity - Add 0.1 Gm. of powdered Cascara Sagrada to 10 cc. of hot water, shake the mixture occasionally until cold, filter, and add sufficient water to make the filtrate measure 10 cc.: this filtrate, on the addition of 10 cc. of ammonia T.S., is colored an orange-yellow.

Macerate 0.1 Gm. of powdered Cascara Sagrada with 10 drops of alcohol, boil the mixture with 10 cc. of water, filter and shake the filtrate with 10 cc. of ether; a yellow ethereal solution separates. Shake 3 cc. of this ethereal solution with 3 cc. of ammonia T.S.: the separated ammoniacal solution on diluting with 20 cc. of water retains a distinct, yellowish-red color. 1920.

Preparations

Extractum Rhamni Purshiana Fluidum 1890

Extractum Cascarae Sagradae, Fluidextractum.

Cascaræ Sagradae, Fluidextractum Cascaræ.

Sagradae Aromaticum 1910, '20.

Average Dose.

1 Gm. (15 grains) 1900.

Metric 1 Gm. Apothecaries 15 grains, 1910, '20.

Books Consulted.

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