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Botanical Medicine Monographs and Sundry

ON THE MEDICAL PROPERTIES OF TWO RHAMNUS BARKS.

By GEORGE W. KENNEDY.

Read before the American Pharmaceutical Association.

Query 21. Is there any difference in the laxative action of *Rhamnus Purshiana* and *Rhamnus Catharticus*?

Experiments undertaken with the view of answering this query require considerable time and labor, since a number of important points are to be taken into consideration in order to be able to reach a satisfactory conclusion, and the omission of either one will cause more or less uncertainty in the results. One of these results is the proof that the two drugs under consideration require somewhat different menstrua for stable liquid preparations, since the menstruum which will thoroughly exhaust the virtues of one of the drugs and hold the principles in perfect solution, will not answer for the other. In order to ascertain if possible the relative strength of these two drugs the fluid extracts were believed to be the most convenient and satisfactory form for experimentation, and they were prepared as follows:

Take of the bark in moderately fine powder	16 ounces
Alcohol (95 per cent.)	11 fluidounces
Glycerin	2 fluidounces
Water	3 fluidounces

Mix the above fluids, moisten the powder with a portion of the mixture, pack properly in a glass conical shaped percolator, cover the surface of the powder with a disc of paper, and add the remaining menstruum. When the liquid begins to drop from the percolator, close the lower orifice with a cork, and leaving closely covered the percolator, to prevent evaporation set it aside in a moderately warm room for four days. The cork is then removed, more menstruum, composed of eleven fluidounces of alcohol and five fluidounces of water, is added gradually, and the percolation continued until twenty-four fluidounces are obtained of which the first thirteen are reserved; the remainder is carefully evaporated to two fluidounces, then add one fluidounce of alcohol, and mix with the reserved portion.

This menstruum is not sufficiently strong in alcohol to make a permanent preparation of *Rhamnus Catharticus*; but by increasing the alcohol in the above formula to twelve fluidounces in the pint, excellent results were obtained and no precipitation of any consequence took place in the fluid extract after standing for several months. When made of the weaker alcoholic menstruum a deposit took place

shortly after the preparation was finished, but none occurred in the fluid extract of *Rhamnus Purshiana*, which was made about nine months ago. The taste of the two preparations differs somewhat; while that of *Rhamnus Catharticus* is unquestionably very bitter, yet it is not near so strong as the bitterness of the *Rhamnus Purshiana*.

To satisfy myself that the drugs were thoroughly exhausted the powders were administered and found to have no laxative properties whatever. The precipitate alluded to above, a portion of which I collected by decantation, was of a brownish color and dissolved completely in liquor potassae, with a deep purplish-red color, characteristic of the resin. By the addition of dilute acetic acid the purplish-red color of the alkaline solution was immediately destroyed, and a brownish colored mass thrown down, which was thrown into a filter, repeatedly washed with water, and dried. It is soluble in alcohol, diluted alcohol, and the alkalies, insoluble in chloroform and ether, and nearly so in water, thus corresponding in appearance and tests with the rhamno-cathartin found in the juice of the buckthorn berries by Binswanger, in 1849. Repeated attempts to crystallize this substance were not successful. On being administered in four grain doses it had a decided cathartic action, and in doses of three grains was strongly laxative.

The separation of this substance from the fluid extract induced me to investigate the subject a little deeper than at first intended. Accordingly a small quantity of the resin was made from each bark by a process noticed below, and the yield ascertained, as well as the medicinal action. In the meantime the fluid extracts were placed at the disposal of several of my medical friends who rendered me valuable aid and reported their conclusions, which agree so closely in the more important points, that it would be superfluous to give them all in detail.

The following report from Dr. I. D. Wiltrout, of Hudson, Wis., appears to cover the subject quite thoroughly:

“The samples of fluid extract of *Rhamnus Catharticus* and *Rhamnus Purshiana* given me for trial have more than met my highest expectations. I used these preparations in cases of constipation characterized by atony, or paresis of the muscular coat of the bowels, induced by a catarrhal condition of the stomach and small intestines. They gave free evacuations in small doses, say from 30 to 50 drops, with no pain, and materially improved the appetite. The evident action is upon the nerve terminals and in this way reflectly stimulating muscular contractibility and glandular secretions. The common experience was that a diminished dose was needed to assure the daily purpose. I also used the remedies on women in whom the colon was allowed to distend from neglect and inattention; in all instances they were efficient. I think these remedies might be usefully prescribed with aloes when there is no pelvic or uterine difficulty, and thus act on the whole bowel. I have prescribed these remedies in combination with the phosphate of sodium in chronic constipation, attributable to a bilious condition. It wonderfully accelerates the action of the phosphate and arrests a sick headache promptly, and does not deplete the system. I think these remedies have a wide province and if the extracts are always as reliable as those you sent, will be used in the cases enumerated. I have prescribed these remedies in a large number of cases and my conclusions as to their relative strength is, that a smaller quantity of the *Rhamnus Purshiana* is required both as a laxative and as a cathartic, but it is a

little nauseating.”

In regard to the squeamish action of the drug noticed by Dr. Wiltrout, in the *Cascara Sagrada*, this has likewise been observed in the bark of the *Rhamnus Frangula* the first year after gathering, but when two or three years old retains only the purgative power, and is much similar in its effect to that of rhubarb, consequently most authorities forbid its use until two years from the time it is gathered, and the Norwegian Pharmacopoeia requires the bark to be kept one year before it is used medicinally. The glucosic fermentation which is now admitted to take place by age in the *Frangula*, may likewise take place in the *Purshiana*. On this point I am unable to give an answer as I could not ascertain the age of the bark operated on.

The resins of both species were obtained from the concentrated alcoholic tinctures by adding them with constant stirring to water, when subsidence had taken place, decanting the supernatant liquids, washing the precipitates twice by decantation, with fresh portions of water, and drying them.

Eight ounces of the bark was operated on in each case. The bark of *Rhamnus Purshiana* yielded 250 grains, or about $6 \frac{3}{10}$ per cent. of resin, which is dark in color and almost black, but if dissolved in caustic potash solution and precipitated by diluted acetic acid it is of a brown color. It is very bitter, of a granular appearance, and contains a small quantity of a yellow fixed oil, which on a piece of white paper produces a greasy stain. The resin is soluble in alcohol, diluted alcohol, in sulphuric acid with a reddish brown color, and in liquor potassae, with a purplish red color; it is insoluble in chloroform and ether. In doses of 1 to 3 grains it acted as a laxative and cathartic. The extractive matter obtained by evaporating the water used in precipitating the resin amounted to $1 \frac{1}{2}$ ounces, or $18 \frac{5}{10}$ per cent., making a total yield of both of $24 \frac{8}{10}$ per cent. The watery extract is of a dark reddish brown color, when perfectly dry breaks with a snap, the fracture being glossy, but when exposed to damp air it becomes soft and sticky; it has an intensely lasting bitter taste, much stronger than the precipitated resin, and its physiological action is similar, 2 to 3 grain doses having laxative effects, and 5 grains acting as a cathartic. It is soluble in a large quantity of water, freely so in dilute alcohol, sparingly soluble in alcohol, and almost insoluble in chloroform and ether; with sulphuric acid it forms a reddish brown solution, and with liquor potassa, makes a clear solution of purplish red color.

The yield of resin from the *Rhamnus Catharticus* is not so large as from the former, 8 ounces yielding 160 grains or $4 \frac{1}{6}$ per cent., and by evaporating the aqueous fluid used in precipitating the resin 210 grains or $5 \frac{5}{10}$ per cent., making a total of 370 grains or $9 \frac{2}{3}$ per cent. The resin is found to be soluble in diluted alcohol, alcohol, in liquor potassae with a claret wine color, in sulphuric acid with a red color; also in ether and chloroform, but insoluble in water. The aqueous extract was soluble in water, sparingly soluble in alcohol, soluble in dilute alcohol, insoluble in ether and chloroform, soluble in liquor potassae with a purplish red color and in sulphuric acid with a reddish brown color. As to the laxative and cathartic properties of these two I found the resin decidedly the stronger, requiring 3 grains for a laxative action, while the aqueous extract required 4 to 5 grains to have the same effect.

From the above observations on the resins and extracts obtained from these barks, I would unhesitatingly conclude that the preparations manufactured from *Rhamnus Purshiana* are decidedly the more active. Before closing I desire to return my thanks to Messrs. Parke, Davis & Co., of Detroit, Mich., who kindly accommodated me with material to make these investigations.

TINCTURE OF VANILLA.

By R. ROTHER.

After vanilla pods there are few if any other crude articles to be found in mercantile pharmacy having such a diversity of quality as inferred from their market value. In consequence, tincture of vanilla for flavoring purposes can be prepared rich in vanilla at a relatively moderate cost, and scant in vanilla at a comparatively exorbitant cost. Connoisseurs claim that they can easily discern the differences in these various preparations. Since, however, the consuming public are in no sense experts in such matters, all grades of these products find a ready market. Viewed from the standpoint of the trained palate, the public taste is exceedingly perverted when it deliberately prefers tonka-mixed vanilla or even tonka pure and simple to the best vanilla.

Manufacturers of flavors have not been slow to recognize the advantage of such a disposition to themselves, and as a consequence of the greatly increased demand the cost of tonka bean has steadily risen to an unprecedented level of late years. The cost of vanilla has, however, appreciably declined. That this was caused by the introduction of artificial vanillin and the decreased demand for pure vanilla flavor is, however, not the case. The probable reason is very likely to be found in the new natural sources of supply that have of recent years been developed. The fresh supplies appear to be so abundant and rich that the natural vanillin obtained therefrom has not only crowded out the synthetic article, but incidentally reduced the cost to a remarkable degree.

The Pharmacopoeia has at this late day embodied a formula for tincture of vanilla. It bears a rather antique form, and it is perfectly safe to add that pharmacists who have occasion to prepare large quantities of the tincture will ignore the official process in every particular. In this preparation there is no need for the presence of any sugar whatever. Such an unusually strong alcoholic menstruum as is officially used is also unnecessary, to say nothing of the objectionable features still outstanding.

Macerating the sliced pods with diluted alcohol constitutes the simplest and best process that can be applied. Where much material is operated on, the extraction is preferably accomplished by the procedure of remaceration. When tonka is conjointly used the operation need not be varied, as its relation to the menstruum is even more favorable than that of vanilla. The crude material may be exhausted with diluted alcohol, separately or coincidentally. Their combined extraction is, as a rule, more convenient.

A tincture containing one ounce of each vanilla and tonka in the pint is very satisfactory, although half an ounce of tonka may ordinarily suffice.

Estimating that the yield of vanillin from vanilla pod is 2 per cent., and that of coumarin from tonka bean the same, then eight troy ounces of each will contain, in round numbers, 80 grains of the principles respectively; it is, however, allowable that it is much less even from apparently the best material. This amount of pure principles costs scarcely half that of an equivalent quantity of good crude substance. However, the writer has for some time past prepared a tincture from pure crystallized vanillin and coumarin, containing three drachms of the first and one drachm of the second, or half a troy ounce of the two together, in the gallon. This is twice the best possible yield of the crude material, or twice the ordinary strength of the-tincture. As the composition here is largely in favor of vanilla, the cost of the resulting product is correspondingly enhanced. It is, however, barely more than half that of a proportionate amount of the raw product. This tincture is therefore twice as strong at half the cost of that as ordinarily made, or a difference in its favor as four to one.

Although diluted alcohol is necessary for extracting the activity from the crude substances, a much weaker alcohol will suffice for simply holding the principles in solution. Two pints of alcohol to the gallon of tincture is ample. The crystals dissolve but slowly in 25 per cent. alcohol, but almost instantly in strong alcohol, which solution may then be diluted without change. It has been deemed advisable to add some glycerin to the tincture, as it is held that such addition is beneficial in bringing out flavors of all kinds. The tincture is colored with liquid caramel or sugar color, and thus presents the full appearance of that obtained from the natural bodies. It is prepared according to the following formula:

Vanillin, crystallized	3 drachms.
Coumarin, crystallized	1 drachms
Caramel, liquid	2 fluidrachms.
Glycerin	4 fluidounces.
Alcohol	2 pints.
Watersufficient to make	1 gallon.

Dissolve the vanillin and coumarin in the alcohol and add four pints of water. Mix the caramel and glycerin with one pint of water and pour it into the first solution, together with enough more water to make the tincture measure one gallon, and filter it if necessary.

MATERIA MEDICA OF THE NEW MEXICAN PHARMACOPOEIA. Part 6

BY THE EDITOR.

Culantrillo de México, *Adiantum tenerum*, Swartz; Filices; in Central Mexico. The pinnae are dark green, rhomboid, wedge-shaped at the base, the inferior margin entire, and the superior one lobulate in the fertile fronds, and dentate in the sterile fronds; the stalks smooth, shining and blackish. It is employed as a substitute for the European maiden hair, and in Guadalajara the decoction (two to four drachms to a pint of water) is much used as an aperient and for promoting the flow of the lochia.

Cundeamor, *Momordica Charantia*, Lin.; Cucurbitaceae; in Tabasco and Yucatan. According to Leon the leaves are anthelmintic, and the roots aphrodisiac.

Curaro, Ourari, Wourari. The dose cannot be fixed. It may be given in injections of 0.001 Gm. frequently repeated until the physiological effects are produced.

Chautle, *Blettia campanulata*, La Llave; Orchidaceae; in temperate regions of Mexico. A decoction of the tubers of this plant is used in dysentery. In like manner are employed the tubers of allied plants, such as *Blettia coccinea*, La El., *Epidendrum pastoris*, La Ll., *Arpophyllum spicatum*, La V. and others.

Chayote, *Sechium edule*, Swartz; Cucurbitaceae; cultivated. The fruit and little tubers are alimentary. A. Herrera found in the fresh tubers potassium tartrate and other salts, albumen, sugar, bitter resinoid matter, and 20 per cent. of starch which is employed as a substitute for arrow root.

Chia, *Salvia Chian*, La Llave; Labiatae; in the central table-land of Mexico, and cultivated in various parts of the Republic. Oliva found in the seeds starch, drying oil and mucilage. Mixed with water their bulk is considerably increased; this mixture flavored with sugar and lemon juice, furnishes a refreshing drink. The seeds are also used in the form of cataplasm as an emollient, and introduced into the eye for extracting therefrom extraneous bodies. (See also "Am. Jour. Phar.," 1882, pp. 227, 229, 261, 585.)

Chicalote, *Argemone mexicana*, Lin., *A. ochroleuca*, Salm, and *A. grandiflora*, Salm; Papaveraceae; in the valley of Mexico, etc. The milk juice is used in skin diseases and mixed with water, for removing from the cornea incipient opacities and spots. The flowers are pectoral and narcotic. The leaves, externally applied, are a remedy against headache, and are stated to contain a small quantity of morphine. Dr. Hamilton found the seeds to be narcotic, and the fixed oil obtained from them is drastic in doses of fifteen to thirty drops.

AMERICAN PHARMACEUTICAL ASSOCIATION.

The following papers were presented to the Association:

Precipitates in Fluid Extracts, by Prof. J. U. Lloyd. This is a continuation of the researches reported in previous years. Strong solutions of seven chemical compounds were treated with strips of filtering paper to complete saturation; the remaining solution, in all instances, retained less of the chemical than it originally contained; but the liquid expressed from the paper, instead of being stronger than the original solution, was in all cases weaker. The solutions of citric acid and of ammonium carbazotate expressed from the paper were of about the same strength as the solutions left from the original ones after having been partly absorbed by the paper. Still weaker expressed solutions were obtained with berberine hydrochlorate, sulphuric acid, oxalic acid, quinine hydrochlorate and quinine bisulphate. The first portions of the expressed solution of the last named salt having formed crystals

within a few minutes. Mr. Hallberg suggested that this might be due to the abstraction of sulphuric acid and the formation of the less soluble diquinine sulphate. Prof. Lloyd had found it necessary to add sulphuric acid in order to dissolve the crystallized salt in the liquid. Prof. Prescott spoke of the importance of these investigations for theoretical science, and as aiding the explanation of the true causes for the necessity of prolonged washing of precipitates and for other chemical operations.

The Preparation of Galenical Liquids from Fluid Extracts, by Prof. O. A. Wall. The author sums up his arguments by stating that tinctures and wines may be legitimately made from fluid extracts, likewise most syrups when they can be made that way, while the solutions of fluid extracts in water which generally are superior, are yet frequently so different from infusions and decoctions in strength, and occasionally in mode of action, that they cannot indiscriminately be used one for the other without the expressed consent of the prescribing physician.

Coloring Elixirs, by J. W. Caldwell, Detroit. This is advocated solely because it is required by the physician and the public. A red color from cochineal is suggested for the elixirs containing bromides, valerianates, alkaloids or chloral; a tincture made of cudbear is recommended for iodides, arsenites, salicylates and monobromated camphor; and tincture of annatto which gives an amber tint, is regarded as suitable for the various combinations of lithium, bismuth, pepsin and strychnine, while elixirs containing cinchona alkaloids are preferably colored with caramel.

Preservation of Mucilage of Acacia, by Thos. W. Watkins, Olyphant. Comparative experiments made with tolu balsam, oil of eucalyptus and oil of gaultheria show that the latter has the greatest preservative properties. The proportions used were oil of gaultheria, 15 minims; calcium phosphate sufficient, water eight ounces, acacia four ounces. Other articles, like syrup of acacia, simple syrup and lard may possibly be preserved by the addition of the same oil.

Infected Solutions, by Dr. R. G. Eccles, Brooklyn. The cryptogamous growth observed in many solutions after having been kept for some time is discussed in a lengthy paper. Regarding the effect of these plants upon health, it is contended that while they may not be the cause of disease, their irritating presence may aggravate the suffering. They may be removed by Pasteur's filter of unglazed porcelain, but not by other kinds of filters. The question as to whether these plants are algae or fungi has not been completely settled; their structure and final development are in favor of the former view. They do not appear to be ferments; but in some solutions putrefactive bacteria are developed. Diluted phosphoric acid, thus infected, after forty days, had not decreased in specific gravity or in neutralizing power. These plants evidently live upon the carbonic acid and ammonia, derived from the air or dissolved in the liquid, and their filamentous sheaths are composed of cellulose. The plants are killed by a boiling temperature, and of the antiseptics tried, mercuric chloride was found to be the best, and about forty times stronger in its action than salicylic or benzoic acid, each of which acted as a preservative in dilutions of 1:2,000, or 2,500 or 3,000. The paper was accompanied by a number of microscopic drawings.

Jacaranda lancifoliata. Under this name the leaves of a plant from Columbia, South America have been experimented with by Drs. Murray Smith, Alfred Wright and Z. Mennell, and were found to be very useful in cases of gonorrhoea, syphilis and in vesical affections attended with purulent urine (" Brit. Med. Jour."). The plant named, it appears to us, is identical with *J. procera*, Sprengel. A description of the leaves with analysis was published in this Journal 1882, pages 134 and 513. The leaflets are very variable in shape, and *J. lanceolata*, Velloso, we believe, is regarded merely as a variety of the species named.

It should be remembered that in Brazil the different species of *Jacaranda* and of other Bignoniaceae are known as *caroba* and distinguished by various affixes, while the common name *jacarandá* is there given to various Leguminosae; according to Peckolt, *Drenocarpus microphyllus*, Wawra, is known as *jacarandá-rosa* and *Machaerium firmum*, F. Allem., as *jacarandá-tau*. J. M. M.

CHOLAGOGUES.—Dr. Baldi, in the Archives Italiennes de Biologie, gives a series of experiments with reputed cholagogues. The Doctor is not in accordance with either Rohrig or Rutherford. Rohrig found that colocynth was the most active cholagogue, and then jalap, aloes, senna, and rhubarb. Rutherford believed the order to be, podophyllin, rhubarb, aloes, colocynth, and senna. Baldi experimented with podophyllin, rhubarb, jalap, pilocarpine, and Carlsbad water; and from his results is inclined to doubt the cholagogue value of all these agents.—*Pac. Med. and Surg. Jour.*, May. 1885.

JABORANDI IN OBSTINATE HICCOUGH.—Pagenstecher (Centrbl. f. d. ges. Therap.) reports a case of hiccough which had resisted every known remedy, including the bromides, morphine, chloroform, and electricity. The patient's diaphragm contracted in the most violent manner about twenty or thirty times a minute, and he had been unable to take any nourishment for three days. After receiving four grams of jaborandi-leaves, in the form a decoction, he had a profuse perspiration, after which the hiccough was completely checked.—*The South. Pract.*, May, 1885