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Botanical Medicine Monographs and Sundry

ADULTERATION OF GROUND ELM BARK.

By GEORGE M. BERINGER, PH. G.

Read at the Pharmaceutical Meeting, October 16th.

Having had occasion recently to examine several samples of ground and pulverized elm bark, which were offered in quantity, I was convinced from physical qualities, odor, taste and lack of mucilage, that two samples—one pulverized, the other ground—offered by the same party, were largely adulterated. Surmising that the adulterant was grain of some kind, most likely corn, ground up with the bark; the smallest quantity of these samples boiled with distilled water gave with iodine an abundant reaction for starch. Pure elm bark (liber alone) should be free from starch.

Mr. Charles Bullock examined the specimen microscopically and detected both corn and potato starch. The potatoes were likely sliced and dried, and then ground up with the bark.

The following simple test would show the deficiency of mucilage in ground elm, and the likelihood of adulteration. Ten (10) grains of pure ground or pulverized elm bark, thoroughly shaken with one fluidounce of water, will in fifteen (15) minutes form a thick jelly-like mass of a good fawn color.

From the source from which these samples were produced, I have no doubt that a large quantity of such adulterated elm is in the market.

EUPHORBIA PILULIFERA.

By JAMES HICKS BUNTING, PH G.

Abstract from a Thesis.

Euphorbia pilulifera is an annual herbaceous plant, thriving in all soils, and grows abundantly in the gardens and streets of the towns of tropical countries. It has been used to some extent in the form of decoction and fluid extract in asthma and bronchitis; also in neuralgia in conjunction with allied remedies. The freshly braised leaves applied over a snake-bite, not only assuage the pain, but are said to remove the venom and heal the wound. A pinch of' the dried powder, taken in some convenient menstruum, excites the heart and arouses the vital forces depressed by the poison.

An analysis was made of the drug in the chemical laboratory of the Philadelphia College of Pharmacy. Using 50 gm. of the drug, powdered, results were obtained which may be summarized as follows:

SOLVENTS AND PER CENT.	REAGENTS, ETC.	CONSTITUENTS, ETC.
Petroleum spirit. Amount dissolved, 2·06 per cent.	Soluble in absolute alcohol. Soluble in 95 per cent. spirit. Residue from treatment with alcoholic potash.	Vegetable wax. Chlorophyll. Caoutchouc.
Stronger ether. Amount dissolved, 1·36 per cent.	Non-volatile principles, 0·56 per cent. Ferric chloride. HCl and dil. H_2SO_4. Dried extract treated with absolute alcohol and water added. Reagents for alkaloids and glucosides. Volatile principle, 0·80 per cent.	Tannin. Chlorophyll. Resin. No change. Volatile acid.
Absolute alcohol. Amount dissolved, 1·13 per cent.	Gelatin. Dissolved out of dried extract by absolute alcohol and treated with water, etc. Reagents for alkaloids and glucosides.	Tannin. Resin and Chlorophyll. No change.
Distilled water. Amount dissolved, 10·9 per cent.	Precipitated by alcohol, 6·13 per cent. Incineration.	Veg. mucilage, 2.6. Sugar, 0·6. Other carbohydrates, 4·1. Ash, total amount, 4·77.
Water with ·2 per cent. sodium hydrate. Amount dissolved, 2·6 per cent.	Precipitated by alcohol, 2 per cent. By incineration.	Mucilage and albuminoids. Ash, 0·6 per cent.
Water with 1 per cent. hydrochloric acid. Amount dissolved, 5·8 per cent.	Precipitated by NH_4HO as Ammonium oxalate. By incineration.	Calcium oxalate 2·04 per cent. Ash, 3·4 per cent.
Chlorine water. Amount dissolved, 15·96 per cent.	Dissolved out by chlorine water. Residue.	Lignin. Cellulose, etc.

Undissolved residue, 60.19 per cent. Constituents: Wax, caoutchouc, chlorophyll, resin, tannin, sugar, mucilage, carbohydrates, albuminoids, calcium oxalate and other salts. March, 1888.

DIOSCOREA VILLOSA.

By WILLIAM CHARLES KALTEYER, PH. G.

Abstract from a Thesis.

Wild yam root, colic root, rheumatism root, are the names given to the rhizome of *Dioscorea villosa*, which grows from Maine to the far West and South. The rhizome and its preparations (fluid extract, tincture, infusion, so-called dioscorein) are mostly used by the eclectics, who consider them very efficacious in bilious colic. The rhizome, of the plant was subjected to an analysis, Dragendorff's plant analysis being used as a guide.

Fifty gm. of the drug in No. 80 powder were treated with petroleum spirit at an ordinary temperature. This extracted 0.208 per cent. of a light-colored fixed oil and a crystalline wax. The wax separated from the oil, and, purified by treating with alcohol, crystallized in fine stellate needles, having a silky lustre, melting at 115ºC. The oil and wax were soluble in absolute alcohol. No volatile oil was found in this extract, nor was any obtained by distillation from another portion of the drug. The drug after drying was next exhausted with ether; this extracted 0.450 per cent. of a solid resinous matter. The ethereal extract, treated with water and filtered, reduced Fehling's solution, due to a glucoside present, but this could not be investigated any farther. The drug was then treated with absolute alcohol, which extracted 8.440 per cent. of a resinous mass, having a very acrid and bitter taste, and totally soluble in water. Applying the usual tests for tannin, it was found not to exist in the rhizome. The aqueous solution, acidulated and rendered alkaline, was agitated successively with petroleum spirit, benzol, chloroform and ether, but nothing was taken up, the liquid retaining the same bitter and acrid taste as before agitation. The solution was then evaporated on a water-bath, dissolved in alcohol, evaporated again, redissolved in water, treated with purified charcoal, filtered and placed in a desiccator, when a brown amorphous substance was left, having a bitter and acrid taste, but all efforts made to crystallize this principle were unsuccessful.

To water the drug yielded 20.16 per cent. of solid matter having an acrid and salty taste, and containing 5.256 per cent. of saccharose, 0.257 per cent. glucose, 0.684 mucilage and extractive matter.

The portion of the drug which was insoluble in the foregoing menstrua, was then treated with 0.2 per cent. solution of caustic soda, and yielded 6.65 per cent. of extract, consisting of 1.98 per cent. of albumen and 4.67 per cent. of phlobaphene.

A 2 per cent. solution of hydrochloric acid extracted 0.920 per cent. of extractive matter.

The drug was then boiled with dilute sulphuric acid to convert all the starch present into glucose; it amounted to 7.425 per cent.

The residue on being treated with chlorine and chlorine water lost 3.66 percent. in weight due to the amount of lignin dissolved. Treatment with nitric acid (sp. gr. 1.16)

and chlorate of potassium, dissolved 0.980 per cent. of intercellular substance. The residue consisting of cellulose amounted to 32.440 per cent.

Another portion of the drug yielded 7.25 of moisture and 2.38 per cent. of ash.

Distillations of fresh portions of the drug with lime and with sulphuric acid yielded nothing of importance.

From all the tests applied in the foregoing, the conclusion is reached that there is saponin or an allied substance present in considerable quantity. Upon agitation of the aqueous solution, the characteristic froth of saponin was produced and the acrid taste which characterize's this principle was plainly apparent to the taste, but all efforts made to separate above principle in a crystalline state were fruitless.

GLEANINGS FROM THE GERMAN JOURNALS.

By FRANK X. MOERK, PH. G.

White wax obtained from yellow wax by sun bleaching does not differ from this in composition; if, however, yellow wax be bleached by use of chemicals the product is altered considerably, so that it may even be pronounced adulterated by the analyst. Hübl finds that the ratio of acidity to the compound ether is as 1:3.7, and this has been confirmed by other investigators.

Fluid Extract of Hydrastis on standing deposits a yellow precipitate which is generally considered to be berberine or one of its derivatives. By recrystallization from glacial acetic acid this substance is obtained in colorless crystalline scales, melting at 133º, which on examination prove to be phytosterin, a vegetable cholesterin-like body. Fluid Extract of Berberis Aquifolium also contains this principle.

The *berberine sulphate* of the market, even when marked *chemically pure*, was found to contain chlorine. The alkaloid *berberine* call be obtained pure by dissolving the salt in acetone and crystallizing; the resultant acetone berberine is dissolved in alcohol and decomposed by passing CO_2 through the solution, the precipitate formed consists of pure berberine carbonate, which, if warmed in a current of hydrogen, yields the pure alkaloid.—E. Schmidt, *Pharm. Ztg.*, 1888, 572.

Stylophorum diphyllum, Nuttall.—The root of this American plant contains chelidonine with a second alkaloid closely related to, if not identical with *chelerythrine*.—E. Schmidt, *Pharm. Ztg.*, 1888, 572.

ABSTRACTS FROM THE FRENCH JOURNALS.

Translated for the AMERICAN JOURNAL OF PHARMACY.

Hedwigia, balsamifera.—Gaucher, Combemale and Marestang describe this plant to the *Acad. des Sci.*, as one of the terebinthaceae growing in the Antilles. The authors

tested its physiological effects with extracts from the bark of both roots and stems, given hypodermically to guinea-pigs. It caused rapid and considerable lowering of temperature; progressive paralysis; generalized convulsions; pupilar dilation; vaso-dilator phenomena; and, in mortal intoxication, respiratory irregularity and cardiac paresis. They found it to be a nerve poison, hypothermic, paralyzing and spasmodic, affecting the medulla. The extract was observed to contain an alkaloid and a resin, the former being more especially a convulsivant and the latter a paralyzing agent. The resin appears to be more active than the alkaloid. Apart from its antithermic qualities, the extract seems to act like curare.—*L'Union méd.*, Oct. 6, 1888.

Salicylated eggs.—According to the *Bull. de. pharm. de Lyon*, the merchants of that city are now preserving eggs in salicylated water instead of lime water. The merchants claimed that the preservation was due to the fact that the water was kept purified by the acid, which latter could not, however, penetrate to the substance of the egg. M. Lambert, a local pharmacist, finds nevertheless, that the salicylic acid passes through the membrane by endosmosis and becomes diffused into the yelk. His tests were as follows: Beat up the white with a little acidulated water and agitate with ether, which, on evaporation leaves the salicylic acid, characterized by its reaction with weak perchloride of iron. The same method is used for the yelk, whose albumen should first be coagulated by heat in order to keep the oil from emulsifying.

PHARBITIS TRILOBA[1] AS A SOURCE OF "JALAP."

In the second part of Vol. I of the "Mitteilungen aus der medicinischen Facultät der kaiserlich Japanischen Universität," published at Tokio, M. K. Hyrano discusses the value of this species, a native of Japan, for medicinal purposes. He states that the purgative properties of the official species of convolvulaceae are due to the presence either of convolvulin $C_{31}H_{50}O_{16}$ or of orizabin $C_{34}H_{56}O_{16}$ (jalapin of W. Meyer). The drugs used in commerce are jalap root, orizaba root, scammony root and turbit root. Jalap root contains convolvulin, but that of *Ipomea Orizabensis* jalapin, which has a homologous composition with convolvulin, but differs from it by its solubility in ether and chloroform. Scammony root also contains orizabin; the resin contained in turbit root appears to consist at least partially of the same substance as that of orizaba root. The purgative properties of the seeds of *Pharbitis Nil* are due to convolvulin. The native name of *Pharbitis triloba*, of Japan, is "asagawo," and its seeds have long been used as a purgative under the name "kengashi."

A full botanical description of the plant and, in particular, of the seeds, follows.

To extract the active principle, 400 grams of the finely-powdered seeds were twice boiled in alcohol of 90 per cent., filtered, and the pure filtrate decomposed by acetate of lead. The liquid filtered from the lead precipitate, after removing the excess of lead by sulphuretted hydrogen, was evaporated in the water-bath, by which a resinous mass was obtained. This was kneaded in warm water in order to rid the resin from its soluble impurities; and it was further purified by again dissolving in alcohol and precipitating by water. The resin thus finally obtained in the water-bath weighed 27 grams. It was a brittle friable substance; ether extracted from it 10.3 per cent. of

1 *Ipomea triloba* (M.M.)

almost pure oil. The portion remaining insoluble in ether gave all the reactions of convolvulin. The pure resin was easily soluble in alcohol, but insoluble in bisulphide of carbon or chloroform; after treatment with dilute hydrochloric acid it reduced alkaline copper solution. Like convolvulin, it exhibited the chemical properties of a glucoside, splitting up, under the action of mineral acids, into sugar and convolvulionic acid $C_{13}H_{23}O_3$, which forms a crystallizable salt with barium, soluble with difficulty in water, but readily in alcohol.

The author concludes that the resin obtained from *Pharbitis triloba* may be used officinally in the place of resina jalapae.—*Phar. Jour. and Trans.*, October 6, p. 270.

ON THE ACTION OF THE ROOT OF APOCYNUM CANNABINUM.

By DMITRY A. SOKOLOFF.

The North American plant *Apocynum cannabinum* belongs to the natural family *Apocynaceae*, which has already supplied us with a series of cardiac poisons and powerful remedies (*Strophanthus hispidus*, *Tanghinia venenifera*, *Vinca major*, *Thevetia neriifolia*, *Nerium Oleander*, etc.). While the apocynum root is official in the United States of America, it remains still very little known in the Old World. In view of this circumstance, Dr. Sokoloff has undertaken an experimental enquiry into the biological action of the drug in Professor S. P. Botkin's clinical laboratory in St. Petersburg. The experiments consisted in the intravenous injection of an aqueous infusion of the root (eight grammes to 100 cc. of water) into various warm-blooded animals, the single dose of the infusion varying from three to ten cubic centimetres. The chief outcome of Sokoloff's researches may be condensed thus:

(1) The drug produces a very pronounced retardation of the cardiac action, with a very considerable enlargement of the pulse wave and a marked rise of the blood tension.

(2 The initial retardation of the heart is followed by an acceleration of the cardiac aciton, while the arterial pressure ascends still further.

(3 The cardiac retardation (first stage) is caused by an irritating action of the drug, both on the central and peripheral inhibitory apparatuses.

(4) The subsequent acceleration (second stage) is not dependent upon anything like paralysis of the inhibitory apparatuses, since the injection of another dose of the infusion can again give rise to a retardation of the heart's work.

(5) On the injection of a very large dose, the two stages are followed by a third one, which is characterized by cardiac arrythmia, the appearance of Traube's waves, and a gradual fall of the blood pressure down to 0.

(6) The rise of the blood tension during the first and second stages is dependent not only upon the stimulation of the vaso-motor centres in the medulla oblongata, but also (and that in a very considerable degree) upon the excitation of the spinal vaso-

motor centres.

Moreover, the heart and blood vessels themselves take a certain active part in the causation of the rise.

(7) Both the central and peripheral vaso-dilatory apparatuses remain wholly intact.—*Med. Chronicle, Sptb.*, 1888; from *Ejened. Klin. Gaz.*, 1888, Nos. 25, 26.