

PARTIAL ANALYSES OF 330 AMERICAN CRUDE DRUGS.*

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For a number of years necessity has been felt for analytical data on authentic specimens of American grown crude drug products for use in connection with the enforcement of the Food and Drugs Act. Because of lack of data of this kind, numerous occasions have arisen where an accurate opinion could not be formed regarding the quality of certain products. Even some official products have insufficient standards of purity, and data are oftentimes altogether lacking regarding a vastly larger number of vegetable products, especially American products, which have at one time or another been used in medicinal preparations.

A number of investigators¹ have hitherto reported analyses of a more or less limited number of crude drugs, both of foreign and domestic origin, but these data have almost invariably been based on commercial samples, the history of which was often uncertain or altogether lacking. These samples in many instances were received in the powdered condition, which rendered them in a measure unsuitable for the acquisition of authentic data. The reported analyses refer largely to imported drugs, while those of domestic drugs are more meager. It seemed desirable, therefore, to secure more comprehensive data regarding domestic

* Read before Scientific Section, A. Ph. A., New York meeting, 1919. Motion passed to have the paper printed, see minutes of the Scientific Section, p. 788, October issue of the JOURNAL.

† Since the undersigned has recently severed his connection with the Pharmacognosy Laboratory, and since the accompanying paper is one of the last which will appear from that Laboratory under this joint authorship, he deems it an appropriate opportunity to express his indebtedness to his friend and colleague, Dr. Arno Viehoveer, Pharmacognosist of the Bureau of Chemistry. The memory of our four years of joint labor and the valuable lessons and experience gained will not soon be forgotten, and although our immediate paths have parted, the writer hopes that future years may bring further opportunities for coöperation in the fields of pharmacognosy and pharmaceutical chemistry—C. O. EWING.

¹ Digests of Comments on the Pharmacopoeia of the United States and on the National Formulary. Published by the Hygienic Laboratory, Treasury Department, United States Public Health Service.

LaWall and Bradshaw, "Ash Standards in Drugs—Are They Necessary," *Proc. Am. Pharm. Assoc.*, 58, 750, 1910.

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Thurston and Thurston, "Powdered Vegetable Drugs," *Proc. Ohio State Pharm. Assoc.*, 1911, p. 69.

Thurston and Thurston, "Ash and Moisture Constants of Powdered Vegetable Drugs," *J. A. Ph. A.*, 2, 474, 1913.

Wilbert, M. I., "Proposed U. S. Pharmacopoeia Limitations for the Ash Content of Drugs," *Amer. Jour. of Pharm.*, 86, 456-60, 1914.

crude drug products. It was felt that such data might prove useful, first, as a criterion of cleanliness, second, as an indication of therapeutic strength, third, as an aid in the detection of adulteration, and fourth, as an aid in the identification of species in certain instances where confusion existed.

During a recent investigation of the crude drug industry of the Blue Ridge mountains, some salient points of which have previously been reported in this JOURNAL,² an opportunity presented itself to secure a considerable number of samples of crude drug products, derived chiefly from the wild growing plant species of that region. The samples so obtained furnished the basis for securing analytical data, a portion of which is reported in this paper. (A few samples from other sources have been included, *e. g.*, cascara sagrada, eridictyon, and eucalyptus, from the Pacific coast.)

Some of these products, it is quite true, have little or no standing among therapeutists, and few of us, perhaps, would place any considerable faith in their efficacy. They are sold, nevertheless, for medicinal use, some of them in considerable amounts. It is worthy of note that a catalogue recently issued by one of the leading New York wholesale drug houses quoted prices on no less than 211 articles mentioned in the attached tabulation. Since so little data have been published regarding authentic American crude drug products of this nature, it is thought that our results are of common interest and are worthy of public record.

THE DETERMINATIONS.

General.—The samples were first examined as to identity and cleanliness. A representative portion was then reserved as a reference sample and the remainder ground to a millimeter powder. The powder was then thoroughly mixed before drawing samples for analysis. All analytical determinations were made on the air-dried material.

The data herein presented include 1, the botanical identity of the specimen, 2, the part used, 3, the color of the powdered drug, 4, total ash, 5, ash insoluble in 10 percent hydrochloric acid, 6, total ether extract, 7, volatile ether extract, 8, odor of ether extract and 9, color of ether extract.

Scientific Name.—The determination of botanical identity has been chiefly based upon Britton and Brown, "Flora of the Northern United States and Canada" (1913). Supplementing this, use has been made of Small's "Flora of the Southeastern United States" (1903), and the botanical descriptions of the National Standard Dispensatory (1916), credit for which is largely due to Rusby. In a number of instances recourse was also had to the National Herbarium in the Smithsonian Institution, Washington, D. C. The data are recorded in the alphabetical order of the scientific names. In the case of official drugs the name adopted in the United States Pharmacopoeia or the National Formulary has been given. In other cases the nomenclature of Britton and Brown has been followed; in the few instances of species which are not recorded by Britton and Brown, Small has usually been followed. In several instances it was only possible to determine the generic name. In such cases we have referred to the sample in question as a "species" of the genus. In several other cases, where the specific identity was

² Ewing and Stanford, "Botanicals of the Blue Ridge," J. A. PH. A., 8, 16, 1919.

probable but could not be absolutely ascertained because of lack of authentic material for comparison, the generic name has been given and the specific name followed by an interrogation point. It will be noted that in a few instances the trade name given a certain sample does not correspond with any of the "common" names usually reported for that species. The few discrepancies are probably due to errors on the part of collectors.

Part Used.—Inasmuch as several parts of the same plant are sometimes used in medicine, it has been necessary to mention that upon which the analytical data was obtained. In the cases of leaves and herbs, the percentage of stems present is indicated in parentheses immediately following the part used. When no statement regarding stems is made, it implies that an inspection showed that obviously less than 10 percent were present. The apparent condition of the sample as regards cleanliness is noted under "Remarks."

Color of Powdered Drug.—Color alone is by no means to be considered as a distinctive characteristic of crude drugs, but for analytical purposes it is sometimes of assistance in preliminary determination of the class to which a powdered drug belongs. In fact, Kraemer³ uses this characteristic as the basis of a key for the analysis of powdered drugs.

Color varies somewhat with different specimens of the same drug. These variations may be partially attributed to variable soil and climatic conditions or difference in age. In the case of leaves, herbs and flowers it is due largely to variations in curing and to conditions and length of storage. The color of leaves may vary through all shades of green to brown; the greater the admixture of the latter, the poorer, usually, is the sample. As for underground parts, such as roots, rhizomes, etc., the color of the soil in which the material has grown sometimes influences the color of the powder, although differences are not so pronounced as in the case of leaves, herbs, and flowers. The colors of different specimens do not vary sufficiently to prevent the use of this characteristic as an indicative factor. The colors were not sufficiently constant, however, to warrant in our opinion exact comparison with a definite color chart, such as Ridgeway's "Color Standards and Nomenclature" (1912). We believe, moreover, that, to the average analyst, who frequently has not access to such standards, expressions in the terms of common colors and shades is preferable to the frequently little-known definitives of the charts.

Ash.—Total ash was determined according to the method of the United States Pharmacopoeia IX (1916), p. 590, using platinum dishes and an electric muffle heated to low dull redness. The value of this determination as a method of judging the cleanliness of crude drugs is generally acknowledged. It is generally conceded too, that variations in analyses due to differing moisture content are less than those found in different samples of the same product grown under different climatic conditions and collected at different times. For this reason also analytical figures regarding these determinations are not significant beyond the first decimal point, and have therefore not been carried out further. The color of the ash in the various samples was noted, but the variations were so slight as to be unworthy of specific comment. The colors varied from nearly pure white, *e. g.*,

³ Kraemer, "Scientific and Applied Pharmacognosy," 1915, p. 825.

corn silk (*Zea mays*), through different shades of bluish and reddish grays to reddish brown and even black, *e. g.*, scouring rush (*Equisetum hyemale*). In general, the greater the admixture of a red shade, the greater the uncleanliness of the sample. Overheating of the ash is generally indicated by a greenish cast because of the very common occurrence of manganese.

Ash Insoluble in 10 Percent Hydrochloric Acid.—The value of an acid insoluble ash determination as supplementary evidence in confirming the cleanliness of crude drug products has been less emphasized than has the determination of total ash. That its value equals, and frequently exceeds that of the total ash determination has been pointed out recently in this JOURNAL.⁴

Its extreme usefulness in connection with the judgment of the cleanliness of crude drug products will be perceived upon making a study of the figures for acid insoluble ash taken in connection with the data given regarding the cleanliness of the sample. A quick, serviceable method for this determination was outlined in the paper mentioned above.

Total Ether Extract.—Total and volatile ether extracts are standard determinations in the analyses of many vegetable crude drug and spice products, and have therefore been included. The method given in the United States Pharmacopoeia IX, pp. 591-2, was followed. It was expected that in many instances the results would not be of any considerable value. At the same time, one never can predict what valuable information may come to light. As an instance thereof may be cited the cases of wahoo root bark (*Euonymus atropurpureus* Jacq.) and wafer ash root bark (*Ptelia trifoliata* L.). A commercial specimen of wahoo was recently called to the writers' attention which consisted of approximately 90 percent of wafer ash. Youngken,⁵ in a recent article, reporting also this adulteration, points out certain differentiating characteristics of the whole barks, among them the solitary rhombohedral crystals of calcium oxalate in the bark of *Ptelia*. While we observed these microscopic characteristics, it appears from limited experiments that their value, especially in powdered mixtures, is restricted. The analytical figures in the accompanying tabulation indicate that the total ether extract should readily serve to detect the addition of wafer ash to wahoo. Based on the figures found—wahoo about 4 percent, wafer ash nearly 25 percent—the adulteration of wahoo with as little as 20 percent of wafer ash could be easily detected by this means.

Volatile Ether Extract.—The volatile constituents of drugs are oftentimes important, especially in the case of the *Labiatae* and several others, and these have therefore been included for all products. The method given in the United States Pharmacopoeia IX, pp. 591-2 was followed. In these determinations an apparatus for rapid evaporation⁶ very much facilitated the volatilization of the ether extracts without the necessity of heating with its possible resultant loss of volatile extractive. The determinations were made at the present time because

⁴ Ewing and Viehoever, "Acid Insoluble Ash Standards for Crude Vegetable Drugs," J. A. PH. A., 8, No. 9, pp. 725-30, 1919.

⁵ Younken, Heber W., "Wafer Ash Bark as an Adulterant for Euonymus," *Amer. J. of Pharm.*, 90, No. 3, pp. 160-65, 1918.

⁶ Merrill and Ewing, "Laboratory Apparatus for Rapid Evaporation," *J. Ind. and Eng. Chem.*, 2, 230, 1919.

volatile constituents are of course probably the most variable and subject to loss during storage. It is conceded that the relative rates at which the various volatile constituents are driven off are different. Nevertheless, in an empirical determination of this type, since conditions affecting the results are held constant, they afford a common basis for comparison. The age of the samples will in a measure account for some of the discrepancies in the several samples of the same product, such as in the case of sassafras, certain of the mints, Canada snakeroot, etc.

Color of the Ether Extract.—The remarks regarding variations in color of the crude drug apply as well to variations in color of the ether extract. They may, however, sometimes be of value, and even in those instances where their value is doubtful, the data have been included in the interest of completeness. In some instances the color of the extract taken in conjunction with the color of the original powder may afford strong presumptive evidence regarding identity. For example, powdered comfrey root (*Symphytum officinale* L.), which is brownish gray in color, yielded a light red extract. No other product displaying this particular combination of color was noted, so that the two together are a pretty strong indication of comfrey root. While the nature of this color was not further investigated at the present time, it is of interest to note that this species is a member of the N. O. *Borraginaceae*, many species of which yield colored extracts, notably the well-known alkanet (*Alkanna tinctoria* L.), and macrotomia root (*Macrotomia cephalotes* D. C.) so-called "Syrian Alkanet."⁷

Odor of Ether Extract.—In many instances the odor of the volatile extract is characteristic of the product and so well known that it can not readily be described by any other term.⁸ Other odors, while not exactly characteristic, sometimes suggest a certain resemblance to those of other well-known substances, although not precisely comparable thereto; in the accompanying tabulation the term "suggestive of" should be interpreted in this fashion. In many instances the material is practically odorless, or at least the odor is lacking in any describable characteristic; where this was the case the column is left blank. In several instances the odor, while difficult to describe in technical terms, carried such a strong suggestion that mention is made thereof in the table. A striking example is the Red Lady Slipper root (*Cypripedium parviflorum* Salisb.) which is described in the National Formulary IV, as having "a distinct heavy odor;" Wall⁹ states that the odor is sickening; Sayre¹⁰ describes it as somewhat valerian-like; Rusby¹¹ states that "the odor is heavy, peculiar, or somewhat like valerian.

DISCUSSION OF RESULTS.

It would of course be impracticable to discuss all the results in detail. A few examples have already been cited to illustrate the usefulness of certain of the

⁷ Ewing and Clevenger, "*Macrotomia cephalotes* D. C., So-Called Syrian Alkanet," J. A. PH. A., 7, 591, 1918.

⁸ For data regarding the odoriferous constituents of the various species, reference may be made to Wehmer, "Die Pflanzenstoffe," 1911; Gildemeister and Hoffman, "Die Atherischen Öle," 1910; and Parry, "Chemistry of Essential Oils," 1918.

⁹ Wall, "Handbook of Pharmacognosy," 1917, p. 219.

¹⁰ Sayre, "Organic Materia Medica and Pharmacognosy," 1917, p. 130.

¹¹ Rusby, "National Standard Dispensary," 1916, p. 565.

determinations made, but for the most part the figures and the data given must speak for themselves. It will not be inappropriate, however, to point out an additional limited number of the more striking examples and indicate in a general way the manner in which the data already acquired have fulfilled the expectations along the lines mentioned in an introductory paragraph.

1. *Cleanliness*.—Total ash and acid insoluble ash are the important data required in the judgment of cleanliness. As a general rule, the difference between the total ash and the acid insoluble ash (that is to say, the *acid soluble ash*) is fairly constant and any considerable deviation from normal should be looked upon with suspicion. While the number of samples examined is too limited on which to base appropriate standards of purity, the fact that the analyses were made upon normal specimens of known authenticity rendered the data useful in an indicative way. Since the majority of the U. S. Pharmacopoeia vegetable drugs are of foreign origin, whereas those of the National Formulary are largely domestic, the data obtained in this investigation are especially appropriate to the latter. Thus, in the case of National Formulary drugs, they indicate that the ash standards for the following are rather liberal:

Aletris	Dioscorea	Gossypium	Leptandra
Calendula	Euonymus	Iris Versicolor	

that the ash standards for the following are probably satisfactory:

Angelica	Caulophyllum	Hamamelidis Folia	Passiflora	Rumex
Aralia	Cimicifuga	Helonias	Pinus Alba	Sambucus
Asarum	Convallariae Radix	Inula	Quercus	Scoparius
Castanea	Coptis	Juglans	Rhus Glabra	Stillingia
Cataria	Delphinium	Fraxinus	Rubus	Trifolium

and that the ash standards for the following are probably too exacting and should be further studied with a view to setting more reasonable limits:

Chionanthus	Geranium	Lappa	Trillium
Cornus	Hydrangea	Solanum	Xanthoxyli Fructus
Eupatorium	Juniperus	Thuja	

With respect to U. S. P. drugs, the reported figures indicate that the ash standards for Humulus, Lobelia, Podophyllum, and Spigelia should be further investigated since, on the basis of the data obtained, they appear to be too exacting. The standard for sassafras, however, needs drastic revision downward. Not one of the samples examined yielded over 7 percent of total ash, as against the U. S. Pharmacopoeia limit of 20 percent.

The figures indicate, too, that such drugs as Aletris, Aristolichia, Spigelia, Verbascum, etc., are difficult to obtain commercially in a very clean condition and that considerable latitude should therefore be allowed in their standards. These data may prove useful too, in the cases of many non-official drugs, such as horehound, tansy, pennyroyal, etc., and also with respect to official drugs for which no standard exists, such as *Cascara sagrada*, *Hydrastis*, *Mentha piperita*, *Mentha viridis*, *Prunus serotina*, *Sanguinaria*, *Viburnum prunifolium*, *Viburnum opulus*, *Zea mays*, etc.

In conclusion, attention may be called to *Cypripedium*, *Caulophyllum*, *Cimicifuga*, *Eupatorium purpureum*, *Hedeoma*, etc., to show that an occasional very dirty sample may appear. As a means for detection of adulteration of this kind the determination of the acid insoluble ash is of immense value.

2. *Therapeutic Strength*.—The original plan contemplated examination for glucosides and alkaloids and quantitative determination of the latter. Due, however, to temporary cessation of the work, the only present data of value in this connection are those referring to drugs whose activity depends upon resinous principles and volatile oils. As illustrative instances where the data may prove useful may be mentioned *Aristolochia*, *Asarum*, *Humulus*, *Podophyllum*, *Sassafras*, *Viburnum*, etc. Referring to *Viburnum prunifolium*, for instance, the activity of this drug is generally considered to be due to fatty acids and esters, especially valerianic. These are present in the volatile ether extract, which may therefore be considered somewhat in the light of a criterion of therapeutic strength. From such a standpoint it appears not improbable that some samples of tree bark may be as therapeutically active as the root bark, although the latter commands a much higher price; it appears too, that tree bark of *Viburnum nudum*, an unofficial species, may be perhaps more valuable than the official *Viburnum prunifolium*; at any rate it deserves further study. *Humulus* is well known to vary widely in its resin content and volatile acids; the table indicates how extreme these variations may be.

3. *Detection of Adulterants*.—The interesting example of *Euonymus* and *Ptelia* has already been cited. Several others noted involve confusion of species and may therefore be considered under the following heading.

4. *Differentiation of Species*.—The errors due to confusion of species are generally due to superficial resemblance of different drugs or to the application of the same common name to several species. As an example of the first type mention may be made of a root submitted as "White Lady Slipper," *Cypripedium candidum* Willd. All of the analytical data cast suspicion upon its being a *Cypripedium*; a histological investigation indicated it to be a *Smilax* species, very probably *Smilax herbacea* L.

Examples of the second type are more numerous, but it will suffice to cite three examples. The name "Samson's Snakeroot" is applied to both *Dasystephana saponaria* and *Psoralea pedunculata*. The latter is the one of medicinal value and may readily be distinguished in powdered form by means of its very much larger total and volatile ether extracts. "Blazing Star" is another common name applied to several different species. Samples obtained under this label consisted of roots of *Aletris farinosa*, *Chamaelirium luteum* and *Lacinaria squarrosa*. The data given may be of aid in the determination of the specific identity of a ground sample.

TABLE I.—PARTIAL ANALYSES OF 330 AMERICAN CRUDE DRUGS.

Lab. No.	Scientific.	Name.	Trade.	Part employed.	Ash.			Ether extract.			Remarks.	
					Total.	Acid insoluble.	Volatile.	Color.	Total.	Volatile.		Odor.
2599	<i>Abies balsamea</i> (L.) Mill.	Balsam		Tree bark	Medium brown	2.0	0.2	5.78	0.40	Light brownish yellow	Terebinthinate, cedar-like, slightly fatty	Clean
2416	<i>Acer negundo</i> L.	Box Elder		Tree bark	Light reddish brown	5.2	0.6	4.94	0.24	Cream	Pleasant, sweetish	Clean
2073	<i>Acer negundo</i> L.	Maple Ash		Tree bark, rossed	Light reddish brown	9.6	2.9	2.94	0.26	Cream	Pleasant, sweetish	Clean
2000	<i>Acer spicatum</i> L.	Mountain Maple		Tree bark	Med. light brown	3.8	0.1	5.38	0.70	Light brown-green	Raw, woody	Clean
2001	<i>Acer spicatum</i> L.	Mountain Maple		Tree bark	Med. light brown	3.9	0.1	4.66	0.70	Light brown-green	Raw, woody	Clean
2418	<i>Achillea millefolium</i> L.	Yarrow		Leaves (35% stems)	Brownish green	8.0	0.4	5.22	0.39	Dark green	Sweetish, aromatic, suggestive of dog fennel	Clean
2498	<i>Achillea millefolium</i> L.	Yarrow		Tops	Brownish green	10.3	0.9	5.48	0.56	Dark green	Sweetish, aromatic, suggestive of dog fennel	Clean
2289	<i>Acorus calamus</i> L.	Calamus (Sweet Flag)		Rhizomes	Light grayish brown	5.7	1.4	6.86	1.00	Medium light green-brown	Characteristic	Clean
2356	<i>Acorus calamus</i> L.	Calamus (Sweet Flag)		Rhizomes	Light grayish brown	4.2	0.4	10.27	0.90	Medium light green-brown	Characteristic	Clean
2614	<i>Acorus calamus</i> L.	Calamus (Sweet Flag)		Rhizomes and roots	Medium brown	15.4	9.6	7.62	1.20	Medium light green-brown	Characteristic	Somewhat dirty
2274	<i>Adiantum pedatum</i> L.	Maidenhair fern		Fronde	Olive-green	9.4	4.0	6.80	0.10	Very dark brownish green	Sweetish, somewhat unpleasant	Clean
2441	<i>Adiantum pedatum</i> L.	Maidenhair fern		Fronde (25% petioles)	Olive-green	7.4	2.6	6.64	0.27	Very dark brownish green	Sweetish, somewhat unpleasant	Clean
2621	<i>Adiantum pedatum</i> L.	Maidenhair fern		Fronde	Olive-green	11.2	4.9	4.20	0.14	Very dark green	Sweetish, somewhat unpleasant	Clean
2070	<i>Adiantum pedatum</i> L.	Maidenhair fern		Rhizomes and roots	Dark brown	18.5	14.7	0.76	0.08	Light yellow-green		Dirty
2035	<i>Asculus (pavia L.)</i>	Buckeye		Tree bark, rossed	Light yellowish brown	7.7	0.3	4.14	0.10	Light brown	Rancid	Clean
2685	<i>Asculus (pavia L.)</i>	Buckeye		Seeds	Light brownish gray	5.2	0.1	3.38	0.20	Brownish cream	Penetrating, suggestive of formic acid	Clean
2648	<i>Agave americana</i> L.	False Aloe		Root	Medium brown	5.2	2.5	1.38	0.14	Light greenish yellow	Fatty, slightly rancid	Somewhat dirty
2288	<i>Agrimonia gryposepala</i> Walt.	Agrimony		Herb	Brownish green	10.2	1.3	5.65	0.39	Med. brown-green	Aromatic, sour	Clean
2401	<i>Agrimonia gryposepala</i> Walt.	Agrimony		Herb	Brownish green	8.3	0.5	6.06	0.42	Med. brown-green	Aromatic, sour	Clean

Lab. No.	Scientific Name.	Trade.	Part employed.	Color of powder.	Ash.		Ether extract.		Odor.	Remarks.	
					Total.	Acid-insoluble.	Total.	Vola-insoluble.			
2507	<i>Agrimonia gryposepala</i> Wallr.	Agrimony	Herb	Brownish green	7.7	0.4	5.66	0.30	Medium greenish brown	Aromatic, sour, somewhat leather-like	Clean
2734	<i>Agropyron repens</i> L.	Couchgrass	Stolons	Light grayish brown	5.7	2.5	1.30	0.16	Very light green	Sweetish, slightly suggestive of vanilla	Quite clean
2094	<i>Agropyron repens</i> L.	Couchgrass	Stolons	Medium grayish brown	3.6	1.2	0.36	0.12	Very light green	Sweetish, slightly suggestive of vanilla	Clean
2693	<i>Ailanthus glandulosus</i> Desp.	Ailanthus	Root bark	Light yellowish brown	5.9	1.7	2.04	0.14	Light green-brown		Clean
2097	<i>Aletris farinosa</i> L.	Aletris	Rhizome and roots	Grayish brown	13.5	10.5	8.94	1.06	Very light brownish yellow	Fatty	Somewhat dirty
2096	<i>Aletris farinosa</i> L.	Aletris	Rhizome and roots	Grayish brown	14.4	9.8	6.50	0.72	Very light brownish yellow	Fatty	Somewhat dirty
2059	<i>Aletris farinosa</i> L.	Unicorn	Rhizome and roots	Grayish brown	23.5	19.1	6.90	0.90	Very light brownish yellow	Fatty	Dirty
2312	<i>Aletris farinosa</i> L.	Blazing Star	Rhizome and roots	Grayish brown	13.8	9.5	8.50	0.64	Very light brownish yellow	Fatty	Somewhat dirty
2431	<i>Alnus rugosa</i> (DuRoiis) Spreng.	Red or Tag Elder	Tree bark	Medium brown	5.7	0.1	6.24	0.62			Clean
2487	<i>Alnus rugosa</i> (DuRoiis) Spreng.	Red or Tag Elder	Tree bark	Medium brown	5.9	0.6	5.76	0.58	Yellowish green		Clean
2069	<i>Alsiue media</i> L.	Chickweed	Herb (30% stems)	Light brownish green	21.6	3.7	1.98	0.24	Med. brown-green	Raw, dusty	Clean
2608	<i>Alsiue media</i> L.	Chickweed	Herb (40% stems)	Light brownish green	22.4	3.5	2.86	0.12	Med. green-brown	Rancid, earthy	Clean
2500	<i>Althea rosea</i> L.	Hollyhock	Flowers	Medium reddish brown	12.7	3.3	2.52	0.18	Light yellowish brown		Clean
2358	<i>Althea rosea</i> L.	Hollyhock	Flowers	Medium reddish brown	12.5	2.5	3.14	0.34	Light yellowish brown		Clean
2676	<i>Amaramithus hybridus</i> L.	Princess Feather	Flowering tops	Light grayish brown	14.1	2.3	2.40	0.06	Medium green	Pleasant, acidic	Fairly clean
2027	<i>Ambrosia elatior</i> L.	Ragweed	Flowering tops (50% stems)	Light greenish brown	9.2	1.0	3.50	0.15	Medium brownish green	Somewhat suggestive of pepper and creosote	Clean
2026	<i>Amygdalis persica</i> L.	Peach Tree	Bark	Very light yellowish brown	5.5	0.45	4.84	0.38	Light brown-green		Clean
2683	<i>Amygdalis persica</i> L.	Peach Tree	Leaves	Brownish green	11.5	2.25	7.68	0.18	Mottled brownish green	Slightly sour	Clean
2269	<i>Angetica</i> (villosa, Walt.) B. S. P.?	Angetica	Root	Very light grayish brown	4.9	0.7	7.40	0.90	Brown	Characteristic; slightly suggestive of celery	Clean

2395	<i>Angelica (villosa, Walt.) B. S. P.?</i>	Angelica	Root	Very light grayish brown	5.9	1.1	5.62	0.80	Brown	Characteristic; slightly suggestive of celery	Clean
2521	<i>Aneglica (villosa, Walt.) B. S. P.?</i>	Angelica	Root	Very light grayish brown	6.8	1.6	5.50	0.80	Brown	Characteristic; slightly suggestive of celery	Clean
2645	<i>Aplectrum hoemale L.</i>	Adam and Eve	Corms	Light gray	4.2	1.3	0.58	0.08	Brownish gray	Characteristic; slightly suggestive of celery	Dirty
2612	<i>Apocynum androsaemifolium L.</i>	Bitterroot	Root	Light grayish brown	4.4	1.8	4.76	0.24	Light green-yellow	Somewhat suggestive of old pipe	Fairly clean
2607	<i>Apocynum cannabinum L.</i>	Black Indian Hemp	Root	Light grayish brown	4.9	1.6	6.00	0.30	Very light yellow	Pleasant, slightly aromatic	Fairly clean
2590	<i>Apocynum cannabinum L.</i>	Black Indian Hemp	Root	Light grayish brown	8.1	5.0	7.48	0.26	Very light yellow	Pleasant, slightly aromatic	Somewhat dirty
2338	<i>Aralia nudicaulis L.</i>	American Sarsaparilla	Root	Light brownish gray	5.0	0.7	2.94	0.22	Light brownish yellow	Fatty, slightly rancid	Clean
2278	<i>Aralia nudicaulis L.</i>	American Sarsaparilla	Root	Light brownish gray	9.5	1.4	3.12	0.30	Light brownish yellow	Fatty, slightly rancid	Clean
2555	<i>Aralia nudicaulis L.</i>	White Sarsaparilla	Root	Light brownish gray	6.5	0.7	2.10	0.14	Light brownish yellow	Fatty, slightly rancid	Clean
2360	<i>Aralia racemosa L.</i>	Spikenard	Root	Light brownish gray	8.1	2.8	10.68	0.88	Medium brown	Characteristic, slightly suggestive of elecampane	Clean
1972	<i>Aralia racemosa L.</i>	Spikenard	Root	Light brownish gray	5.9	0.8	11.54	1.40	Medium brown	Characteristic, slightly suggestive of elecampane	Clean
2261	<i>Aralia racemosa L.</i>	Spikenard	Root	Light brownish gray	6.6	2.5	10.62	1.18	Medium brown	Characteristic, slightly suggestive of elecampane	Clean
2602	<i>Aralia racemosa L.</i>	Spikenard	Root	Light brownish gray	5.3	0.9	14.28	1.40	Med. light brown	Characteristic, slightly suggestive of elecampane	Clean
2014	<i>Aralia spinosa L.</i>	Prickly Elder	Root bark	Light grayish brown	6.8	1.8	3.20	0.16	Med. light brown	Fatty, acid-like	Clean
2591	<i>Aralia spinosa L.</i>	Prickly Elder	Tree bark	Light grayish brown	5.1	0.2	7.04	0.96	Med. light brown	Slightly suggestive of bay rum and wild ginger	Clean
2302	<i>Arctium lappa L.</i>	Burdock	Root	Medium brown	9.1	1.2	2.80	0.40	Light greenish yellow	Unpleasant	Clean
2350	<i>Arctium lappa L.</i>	Burdock	Root	Medium brown	10.7	1.9	2.54	0.32	Light greenish yellow	Unpleasant	Clean
2586	<i>Arctium lappa L.</i>	Burdock	Root	Medium brown	11.9	7.6	1.52	0.22	Light greenish yellow	Unpleasant	Somewhat dirty
2652	<i>Arctium lappa L.</i>	Burdock	Leaves	Dark olive-green	8.0	2.9	5.16	0.22	Very dark brown-green	Suggestive of dried herring	Clean
1986	<i>Arctium lappa L.</i>	Burdock	Seed	Medium gray	3.8	0.2	20.98	0.26	Light yellow-green	Nutty	Clean
2169	<i>Arctostaphylos Uva Ursi (L.) Spreng.</i>	Bearberry	Leaves	Yellowish green	3.9	0.4	12.44	0.32	Mottled brownish creamy green	Somewhat aromatic	Clean

Lab. No.	Name.		Part employed.	Color of powder.	Ash.			Ether extract.			Remarks.
	Scientific.	Trade.			Total.	Acid-insolu-ble.	Vola-tile.	Total.	Color.	Odor.	
2219	<i>Arctostaphylos Uva Ursi</i> (L.) Spreng.	Bearberry	Leaves	Yellowish green	3.4	0.1	11.06	0.36	Mottled brownish creamy green	Somewhat aromatic	Clean
2263	<i>Arisaema triphyllum</i> Torr.	Indian Turnip	Corn	Very light gray	4.4	0.5	1.14	0.12	Very light brown		Clean
2704	<i>Arisaema triphyllum</i> Torr.	Indian Turnip	Corn	Very light gray	6.1	1.6	1.02	0.10	Very light yellow		Clean
2386	<i>Arisaema triphyllum</i> Torr.	Indian Turnip	Corn	Very light gray	7.1	2.1	1.38	0.10	Very light yellow		Clean
2739	<i>Aristolochia serpentaria</i> L.	Serpentaria	Roots	Medium brown	15.3	9.9	5.70	1.26	Med. dark brown	Characteristic; strongly terebinthinate, slightly camphoraceous	Rather dirty
2342	<i>Aristolochia serpentaria</i> L.	Black Snakeroot	Roots	Medium brown	15.4	10.4	6.58	0.78	Med. dark brown	Characteristic; strongly terebinthinate, slightly camphoraceous	Somewhat dusty
1981	<i>Aristolochia serpentaria</i> L.	Virginia Snakeroot	Roots	Medium brown	16.9	10.8	3.44	1.18	Light brown	Characteristic; strongly terebinthinate, slightly camphoraceous	Rather dusty
2694	<i>Aristolochia serpentaria</i> L.	Virginia Snakeroot	Roots	Medium brown	12.7	6.9	4.96	1.36	Medium brown	Characteristic; strongly terebinthinate, slightly camphoraceous	Fairly clean
1980	<i>Aristolochia reticulata</i> Nutt.	Texas Snakeroot	Roots	Medium brown	16.5	12.5	5.22	0.96	Medium brown	Characteristic; strongly terebinthinate, slightly camphoraceous	Very dusty
2405	<i>Armoracia armoracia</i> Britton	Horseradish	Roots	Greenish brown	6.4	0.2	1.78	0.30			Clean
2573	<i>Armoracia armoracia</i> Britton	Horseradish	Leaves	Greenish brown	17.6	1.1	2.46	0.20	Medium green	Sour	Clean; ash very high in carbonates
2450	<i>Armoracia armoracia</i> Britton	Horseradish	Leaves	Greenish brown	14.2	0.7	2.89	0.20	Medium green	Sour	Clean; ash very high in carbonates
2709	<i>Artemisia abrotanum</i> L.	Southernwood	Herb	Greenish brown	7.1	1.0	8.28	1.20	Dark green	Characteristic; sour, slightly suggestive of dog fennel	Clean

Number	Botanical Name	Southernwood	Leaves	Greenish brown	12.6	0.9	8.16	0.75	Dark brownish green	Characteristic; sour, slightly suggestive of dog fennel	Clean
2001	<i>Artemisia abrotanum</i> L.	Southernwood	Leaves	Greenish brown	12.6	0.9	8.16	0.75	Dark brownish green	Characteristic; sour, slightly suggestive of dog fennel	Clean
2266	<i>Asarum canadense</i> L.	Canada Snakeroot	Rhizomes and root	Med. dark brown	9.3	1.3	4.33	0.80	Brownish green	Suggestive of ginger; peppery	Fairly clean; probably old sample
2383	<i>Asarum canadense</i> L.	Wild Ginger	Rhizomes and root	Med. dark brown	12.2	0.9	2.36	0.66	Brownish green	Suggestive of ginger; peppery	Fairly clean; probably old sample
2638	<i>Asarum canadense</i> L.	Southern Wild Ginger	Rhizomes and root	Med. dark brown	10.0	0.5	5.60	3.38	Brownish green	Suggestive of ginger; peppery	Fairly clean
2639	<i>Asarum canadense</i> L.	Southern Wild Ginger	Rhizomes	Med. dark brown	12.5	0.6	7.14	3.88	Brownish green	Suggestive of ginger; peppery	Fairly clean
2883	<i>Asarum canadense</i> L.	Wild Ginger	Rhizomes and root	Med. dark brown	21.5	0.5	8.06	4.33	Brownish green	Suggestive of ginger; peppery	Freshly collected
2616	<i>Asclepias incarnata</i> L.	White Hemp	Root	Light grayish brown	13.5	8.8	1.96	0.12	Nearly colorless; greenish tinge	Raw, slightly rancid, peppery	Somewhat dirty
2038	<i>Asclepias syriaca</i> L.	Silkweed	Root	Very light gray	5.4	0.3	2.32	0.18	Nearly colorless	Faint; suggestive of sabal or coconut oil	Clean
2422	<i>Asclepias tuberosa</i> L.	Butterfly or Pleurisy Root	Root	Very light brownish gray	5.1	0.9	3.46	0.14	Nearly colorless	Somewhat bland, nutty	Clean
2689	<i>Asclepias tuberosa</i> L.	Butterfly or Pleurisy Root	Root	Very light brownish gray	7.1	2.0	4.64	0.10	Nearly colorless	Somewhat bland, nutty	Clean
2262	<i>Asclepias tuberosa</i> L.	Butterfly or Pleurisy Root	Root	Very light gray	3.5	0.4	2.37	0.12	Nearly colorless	Fatty, faintly aromatic	Clean
2533	<i>Asparagus officinalis</i> L.	Asparagus	Root	Medium brown	9.7	3.5	3.66	0.34	Light yellow, almost colorless	Suggestive of raw peanuts; also earthy	Fairly clean
2528	<i>Aster puniceus</i> L.	Red Stalk Aster	Root	Medium brown	38.4	32.5	1.54	0.22	Med. light brown	Earthy	Very dirty
2488	<i>Althium filix foemina</i> (L.) Roth.	Backache Brake	Root	Dark reddish brown	7.1	2.7	0.36	0.04	Very light yellow-green		Somewhat dirty
2077	<i>Baptisia tinctoria</i> (L.) R. Br.	Wild Indigo	Roots	Light yellowish brown	1.9	0.2	1.30	0.10	Med. brown-yellow	Sweetish, smoky, earthy	Clean
1993	<i>Benzoin acitvale</i> (L.) Nees.	Spicewood	Leaves	Dark greenish gray	8.6	1.7	5.84	0.28	Med. brown-green	Pleasant, aromatic, somewhat cedar-like	Somewhat dusty
2093	<i>Berberis</i> sp.	Oregon Grape	Root	Light greenish yellow	5.6	0.1	0.32	0.08	Light greenish yellow		Clean
2319	<i>Betula lenta</i> L.	Black Birch	Bark	Light reddish brown	2.5	0.1	1.96	0.20	Light greenish cream	Wintergreen-like	Clean
2436	<i>Betula lenta</i> L.	Sweet Birch	Bark	Light reddish brown	4.1	0.0	2.04	0.16	Light greenish cream	Wintergreen-like	Clean
2572	<i>Betula lenta</i> L.	Mahogany Birch	Bark	Light reddish brown	3.8	0.3	2.30	0.10	Colorless	Wintergreen-like, fatty, acidic	Clean
2013	<i>Betula nigra</i> L.	Red Birch	Leaves	Medium greenish brown	4.5	0.5	8.26	0.36	Dark green-brown	Sour and somewhat suggestive of olive oil	Clean

Lab. No.	Name.		Part employed.	Ash.		Ether extract			Remarks.	
	Scientific.	Trade.		Color of powder.	Total.	Acid insoluble.	Volatile.	Total.		Color.
2381	<i>Bicuculla canadensis</i> (Caldie) Millsp.	Turkey Corn	Corns	Dark yellowish brown	5.2	2.9	0.70	0.08	Light yellowish greenish	Dirty; slight admixture of <i>B. cucullaria</i> (L.) Millsp., not over 10%
2000	<i>Bicuculla canadensis</i> (Caldie) Millsp.	Turkey Corn	Corns	Dark yellowish brown	2.8	0.5	0.42	0.02	Light yellowish greenish	Clean; slight admixture of <i>B. cucullaria</i> (L.) Millsp., not over 10%
2506	<i>Bostrychium virginianum</i> L.	Moonwort	Herb	Brownish green	10.0	1.4	2.90	0.30	Dark green	Somewhat suggestive of cumin
2543	<i>Bursa bursa-pastoris</i> (L.) Britton	Shepherd's Purse	Herb	Light grayish green	9.6	1.0	2.90	0.12	Dark green	Slightly fetid, somewhat pepper-like
2585	<i>Butneria florida</i> (L.) Kearney	Carolina Allspice	Tree bark	Reddish brown	5.0	1.7	4.66	0.46	Med. brown-green	Pleasant, aromatic, suggestive of ginger
2703	<i>Buxus sempervirens</i> L.	Boxwood	Leaves	Light olive-green	6.2	0.6	4.64	0.12	Medium green	Clean
2411	<i>Calendula officinalis</i> L.	Marigold	Flowers	Dark golden brown	7.4	0.3	10.54	0.60	Orange-brown	Clean
2713	<i>Calendula officinalis</i> L.	Marigold	Flowers	Dark golden brown	6.7	0.9	5.40	0.30	Med. dark brown	Clean
2686	<i>Calendula officinalis</i> L.	Marigold	Flowers with tops	Dark greenish brown	6.6	1.0	7.98	0.54	Orange-brown	Clean
2609	<i>Calycanthus floridus</i> L.	Spice Bush	Leaves	Dark greenish brown	5.1	0.2	9.50	0.94	Dark greenish brown, nearly black	Slightly suggestive of bay
2581	<i>Castalia odorata</i> (Dryand) Woods, and Wood	White Pond Lily	Root	Light grayish brown	3.6	0.5	3.82	0.08	Light green-yellow	Suggestive of ensilage; ethereal
2292	<i>Castanea dentata</i> (Marsh) Borkh.	Chestnut	Leaves	Olive-green	5.1	0.3	5.42	0.42	Very dark green, nearly black	Aromatic, slightly sour
2082	<i>Castanea dentata</i> (Marsh) Borkh.	Chestnut	Leaves	Olive-green	5.0	0.6	7.74	0.28	Very dark green, nearly black	Aromatic, slightly sour
2341	<i>Castanea dentata</i> (Marsh) Borkh.	Chestnut	Leaves	Olive-green	4.0	0.2	7.78	0.28	Very dark green, nearly black	Aromatic, slightly sour
2034	<i>Castanea dentata</i> (Marsh) Borkh.	Chestnut	Tree bark rossed	Light reddish brown	4.5	0.1	6.08	0.14	Light brown-yellow	Clean
2280	<i>Caulophyllum thalictroides</i> (L.) Michx.	Blue Cohosh	Root	Medium gray	4.1	1.1	12.8	0.06	Creamy white	Clean
2618	<i>Caulophyllum thalictroides</i> (L.) Michx.	Blue Cohosh	Root	Medium gray	4.6	1.8	1.44	0.1	Creamy white	Clean

2340	<i>Camophyllum thalictroides</i> (L.) Michx.	Blue Cohosh	Root	Medium gray	32.5	2.2	1.18	0.08	Creamy white	Aromatic	Very dirty
2630	<i>Cronolhus americanus</i> L.	Red Root or Jer-sey Tea	Leaves	Medium greenish brown	4.2	0.2	5.70	0.30	Medium green		Clean
2287	<i>Cronolhus americanus</i> L.	Red Root or Jer-sey Tea	Root	Medium reddish brown	2.3	0.5	0.63	0.04	Whitish		Clean
2657	<i>Cronolhus americanus</i> L.	Red Root or Jer-sey Tea	Root	Medium reddish brown	3.6	1.48	0.94	0.06	Creamy white		Clean
2544	<i>Cephalanthus occidentalis</i> L.	Button Bush	Tree bark	Light reddish brown	4.1	0.4	3.42	0.20	Light yellowish green		Clean
2678	<i>Cercis canadensis</i> L.	Judas Tree	Tree bark	Medium reddish brown	9.0	0.7	3.54	0.20	Light yellowish green		Clean
2687	<i>Chaenolobus undulatus</i> (Wall.) Small	Black root	Root	Medium brown	2.8	0.7	0.26	0.02	Very light yellow		Clean
2490	<i>Chamaecyparis thyoides</i> (L.) B. S. P.	Cedar	Leaves	Medium greenish brown	6.3	0.5	8.70	0.56	Dark green	Sweet, aromatic, characteristic	Clean
2717	<i>Chamaecyparis luteum</i> (L.) A. Gray	Star Root	Rhizome	Light brownish gray	3.0	0.5	3.10	0.16	Medium brown	Fatty, somewhat rancid	Clean
2647	<i>Chamaecyparis luteum</i> (L.) A. Gray	False Unicorn	Rhizome & roots	Light gray	4.4	2.1	3.58	0.20	Light green yellow	Fatty, somewhat rancid	Clean
1977	<i>Chamaecyparis luteum</i> (L.) A. Gray	False Unicorn	Rhizome	Light gray	3.7	1.2	5.04	0.16	Light green-yellow	Fatty, somewhat rancid	Clean
2270	<i>Chamaecyparis luteum</i> (L.) A. Gray	False Unicorn	Rhizome & roots	Light gray	7.6	3.3	2.76	0.05	Light green-yellow	Fatty, somewhat rancid	Somewhat dirty
2123	<i>Chamaecyparis luteum</i> (L.) A. Gray	False Unicorn	Rhizome	Light gray	4.6	2.1	3.64	0.24	Light green-yellow	Fatty, somewhat rancid	Clean
2316	<i>Chelone glabra</i> L.	Balmory	Herb	Medium brownish green	8.4	2.0	5.46	0.45	Med. dark green		Clean
2040	<i>Chelone glabra</i> L.	Balmory	Herb	Medium brownish green	8.9	1.3	3.36	0.30	Dark brown-green		Clean
2400	<i>Chelone glabra</i> L.	Balmory	Leaves	Medium brownish green	8.9	2.7	3.86	0.38	Med. dark green		Clean
2062	<i>Chenopodium ambrosioides</i> L.	Wormseed	Leaves	Medium brownish green	15.2	2.8	3.48	0.42	Medium green	Characteristic	Somewhat dusty; ash very high in carbonates
2491	<i>Chenopodium ambrosioides</i> L.	American Wormseed or Jerusalem Oak	Leaves	Medium brownish green	19.5	1.8	2.12	0.30	Medium green	Characteristic	Somewhat dusty; ash very high in carbonates
2661	<i>Chenopodium ambrosioides</i> L.	Wormseed	Seeds	Medium gray	10.0	2.6	7.96	0.85	Olive-green	Characteristic	Chaffy
1976	<i>Chenopodium ambrosioides</i> L.	American Wormseed	Seeds	Dark gray	22.3	14.7	5.80	0.60	Medium brown	Characteristic	Dirty
2339	<i>Chenopodium ambrosioides</i> L.	American Wormseed or Jerusalem Oak	Seeds	Medium brownish gray	8.7	1.3	5.24	0.96	Med. brown-green	Characteristic	Somewhat dusty

Lab. No.	Name.		Part employed.	Color of powder.	Ash.		Ether extract.		Color.	Odor.	Remarks.	
	Scientific.	Trade.			Total.	Acid insoluble.	Total.	Volatile.				
2659	<i>Chimaphila maculata</i> (L.) Pursh.	Ratsbane	Herb (40% stems)	Med. green-yellow	4.6	0.7	9.50	0.42	Medium brown	greenish	Slightly aromatic; very faintly suggestive of pennyroyal	Clean
2145	<i>Chimaphila umbellata</i> (L.) Nutt.	Pipsissewa	Herb (20% stems)	Medium greenish brown	9.6	0.7	10.32	0.58	Dark brown	greenish	Slightly aromatic	Clean
2157	<i>Chimaphila umbellata</i> (L.) Nutt.	Prince's Pine	Herb (15% stems)	Medium greenish brown	5.3	0.8	10.06	0.78	Dark brown	greenish	Slightly aromatic	Clean
2361	<i>Chionanhus virginica</i> L.	Fringe Tree	Root bark	Light grayish brown	5.9	0.9	2.02	0.18	Light brown	greenish		Clean
2080	<i>Chionanhus virginica</i> L.	Fringe Tree	Root bark	Light grayish brown	4.4	0.4	3.72	0.14	Very light brown	greenish		Clean
2284	<i>Chrysanthemum leucanthemum</i> L.	Ox-Eye Daisy	Flowers	Yellowish brown	9.9	1.7	6.02	0.42	Medium brown	greenish	Sweetish, dusty, slightly suggestive of chamomile	Clean
2718	<i>Chrysanthemum leucanthemum</i> L.	Ox-Eye Daisy	Flowers	Yellowish brown	8.3	0.2	5.14	0.60	Medium brown	greenish	Sweetish, dusty, slightly suggestive of chamomile	Clean
2334	<i>Chrysanthemum leucanthemum</i> L.	Ox-Eye Daisy	Flowers	Yellowish brown	10.4	0.8	6.30	0.52	Medium brown	greenish	Sweetish, dusty, slightly suggestive of chamomile	Clean
2083	<i>Chrysanthemum parthenium</i> (L.) Pers.	Feverfew	Herb	Medium brownish green	13.7	2.3	5.96	0.30	Very dark brownish	greenish	Sweetish, suggestive of dog-fennel and Roman chamomile	Clean
2420	<i>Chrysanthemum parthenium</i> (L.) Pers.	Feverfew or Feverfew	Flowering tops	Medium brownish green	14.9	3.6	6.48	0.88	Medium brownish	dark green		Clean
2654	<i>Chrysanthemum parthenium</i> (L.) Pers.	Feverfew or Feverfew	Flowering tops (30% stems)	Medium brownish green	12.4	0.9	5.88	0.53	Medium brownish	dark green	Very aromatic, suggestive of dog-fennel and Roman chamomile	Clean
2283	<i>Cimicifuga racemosa</i> (L.) Nutt.	Black Cohosh	Root	Medium brownish gray	8.9	3.0	1.80	0.24	Light yellow	orange-yellow	Raw	Clean
2688	<i>Cimicifuga racemosa</i> (L.) Nutt.	Black Cohosh	Root	Medium brownish gray	7.5	1.4	1.80	0.14	Light yellow	yellow	Raw, somewhat nutty	Clean
2344	<i>Cimicifuga racemosa</i> (L.) Nutt.	Black Cohosh	Root	Medium brownish gray	11.7	6.8	2.88	0.18	Light yellow	orange-yellow	Raw, somewhat suggestive of parsnips	Considerable dirt
1983	<i>Cimicifuga racemosa</i> (L.) Nutt.	Black Cohosh	Root	Medium brownish gray	18.2	11.3	2.58	0.18	Light yellow	low	Slightly raw, fatty	Very dirty
2371	<i>Collinsonia canadensis</i> L.	Stoneroot	Rhizomes & roots	Grayish brown	5.2	2.3	0.78	0.10	Light cream			Slightly dusty
1984	<i>Collinsonia canadensis</i> L.	Stoneroot	Rhizomes & roots	Grayish brown	3.3	0.5	0.56	0.06	Light cream			Clean

2279	<i>Collinsonia canadensis</i> L.	Stoneroot	Rhizomes & roots	Grayish brown	3.4	0.3	0.44	0.02	Light cream	Clean
2627	<i>Collinsonia canadensis</i> L.	Stoneroot	Rhizomes & roots	Grayish brown	12.7	9.1	0.68	0.06	Light cream	Dirty
2525	<i>Complomenta perigrina</i> (L.) Coulter.	Sweet Fern	Leaves (30% stems)	Medium brown	2.7	0.5	5.0	0.49	Dark green	Clean
2102	<i>Convallaria majalis</i> L.	Lily of the Valley	Root	Medium brownish gray	10.3	3.7	2.22	0.20	Orange-red	Fairly clean
2613	<i>Coptis trifolia</i> L.	Goldthread	Herb	Yellowish brown	5.1	0.6	2.98	0.20	Med. dark green-brown	Clean
2435	<i>Corallorrhiza odonithoriza</i> (Willd.) Nutt.	Crawley Root	Root	Med. dark brown	7.9	3.1	2.42	0.15	Red-brown	Foistly clean
2569	<i>Corallorrhiza odonithoriza</i> (Willd.) Nutt.	Crawley Root	Root	Med. dark brown	16.5	9.6	0.84	0.10	Red-brown	Dirty
2556	<i>Cornus amomum</i> Mill.	Red Ozier	Stem bark	Reddish brown	5.2	0.7	4.64	0.26	Med. brown-green	Clean
2702	<i>Cornus florida</i> L.	Dogwood	Stem bark	Reddish brown	6.3	0.3	2.46	0.06	Bright yellow	Clean
1999	<i>Cornus florida</i> L.	Dogwood	Root bark	Reddish brown	10.6	1.6	7.58	0.20	Cream	Clean
2075	<i>Cornus florida</i> L.	Dogwood	Leaves	Brownish gray	10.3	2.3	3.22	0.18	Med. light green	Clean
2662	<i>Cornus florida</i> L.	Dogwood	Flowers	Light brownish gray	9.7	0.7	7.42	0.24	Brown-yellow	Clean
2099	<i>Cornus rugosa</i> Lam.	Green Ozier	Stem bark	Medium grayish brown	15.5	10.4	3.62	0.32	Light yellowish green	Somewhat dirty
2017	<i>Cracca virginiana</i> L.	Hoary Pea (Devil's shoestring)	Root	Light yellowish gray	3.5	0.9	3.38	0.24	Very light brown	Clean
2349	<i>Cuscuta origanoides</i> (L.) Britton	Dittany	Herb (35% stems)	Medium brownish green	5.4	1.2	4.96	0.52	Medium dark green	Clean
2705	<i>Cuscuta origanoides</i> (L.) Britton	Dittany	Herb (45% stems)	Medium brownish green	5.7	0.3	4.67	0.65	Med. dark green	Clean
1997	<i>Cucurbita citrullus</i> L.	Watermelon	Seed	Light yellowish gray	2.7	0.2	22.52	0.00	Light yellow-green	Clean; ether extract gained when heated
2425	<i>Cucurbita pepo</i> L.	Pumpkin	Seed	Light yellowish gray	4.0	0.0	27.94	0.00	Light yellowish green	Clean; ether extract gained when heated
2064	<i>Cynoglossum officinale</i> L.	Hound's Tongue	Roots	Med. dark brown	13.6	1.9	0.52	0.08	Medium reddish brown	Clean; ash very high in carbonates
2522	<i>Cyrtopodium parviflorum</i> Salisb.	Red Lady Slipper	Root	Medium grayish brown	43.3	33.9	2.02	0.12	Dark greenish brown	Very dirty

Lab. No.	Scientific.	Name.	Trade.	Part employed.	Ash.			Ether extract.			Remarks.
					Total.	Acid insoluble.	Volatile.	Total.	Color.	Odor.	
2033	<i>Cytisus scoparius</i> Koch.		Scotch Broom	Herb (mostly stems)	3.3	0.1	3.18	0.20	Dark green	Sour	Clean; large percentage of stems normal
2724	<i>Dasyplephana sesonaria</i> (L.) Small		Samson's Snake-root	Root	5.8	1.6	3.84	0.10	Brownish orange	Suggestive of spike-nard	Clean
2294	<i>Datura stramonium</i> L.		Stramonium	Leaves	16.1	0.9	5.40	0.20	Dark brownish green	Sour, nauseous	Clean; ash very high in carbonates
1974	<i>Datura stramonium</i> L.		Stramonium	Leaves	16.7	1.1	3.20	0.20	Dark green	Sour, nauseous	Fairly clean; ash very high in carbonates
2406	<i>Datura stramonium</i> L.		Jimson-weed	Leaves	11.7	0.2	4.18	0.38	Dark green	Sour, nauseous	Clean; ash very high in carbonates
2643	<i>Datura stramonium</i> L.		Jimson-weed Purple	Leaves	18.6	3.1	4.32	0.32	Very dark brown-green	Sour, nauseous	Clean; ash very high in carbonates
2424	<i>Datura stramonium</i> L.		Jimson-weed	Seed	6.4	3.5	16.22	0.12	Med. green-brown	Fatty, somewhat rancid	Fairly clean
2086	<i>Daucus carota</i> L.		Wild carrot	Root	5.0	0.6	1.04	0.14	Light yellow	Fatty acid	Clean
2634	<i>Daucus carota</i> L.		Wild carrot	Flowering tops	15.1	1.1	3.72	0.22	Dark brown-green	Slightly suggestive of chrysanthemum herb	Clean; ash high in carbonates
2673	<i>Delphinium consolida</i> L.		Larkspur	Seed	5.7	0.9	36.32	0.14	Pale straw	Bland, fatty	Clean
2265	<i>Dioscorea villosa</i> L.		Wild Yam	Root	3.7	0.4	0.78	0.12	Very light greenish brown	Slightly aromatic; sweetish	Clean
2085	<i>Dioscorea villosa</i> L.		Wild Yam	Root	2.9	0.7	1.14	0.12	Light greenish brown	Slightly aromatic; sweetish	Clean
2368	<i>Dioscorea villosa</i> L.		Wild Yam	Root	4.1	0.3	1.58	0.20	Light greenish brown	Slightly aromatic; sweetish	Clean
2006	<i>Diospyros virginiana</i> L.		Persimmon	Tree bark	9.5	0.3	3.16	0.10	Dark orange dish brown		Clean
2698	<i>Diphyletia cymosa</i> Michx.		Umbrella Leaf	Root	6.6	4.1	5.40	0.26	Bright yellowish green	Fatty, bland	Slightly dirty
2553	<i>Elephantopus tomentosus</i> L.		Elephant's Foot	Leaves	11.8	2.3	6.18	0.20	Dark green	Sour	Clean
2025	<i>Elephantopus tomentosus</i> L.		Elephant's Foot	Root	13.7	7.4	4.10	0.20	Light brown	Sour	Somewhat dirty
2403	<i>Epigaea repens</i> L.		Gravel Plant	Herb (65% stems)	5.5	3.7	2.93	0.18	Mottled creamy and med. green	Raw, slightly sour	Fairly clean; large amount of stems normal

2072	<i>Epigaea repens</i> L.	Gravel Plant	Herb (50% stems)	Medium grayish brown	2.6	0.6	3.66	0.25	Mottled creamy and med. green	Raw, slightly sour	Clean; large amount of stems normal
2003	<i>Equisetum hyemale</i> L.	Scouring Rush	Herb	Light grayish green	16.4	11.3	2.42	0.20	Med. dark brown-green	Slightly sour	Clean; high in-soluble ash due to silicates normally present
2538	<i>Erechtites hieracifolia</i> Raf.	Fireweed	Leaves	Med. dark brown	12.7	1.2	8.64	0.34	Medium green	Sour	Clean
2174	<i>Eriodictyon californicum</i> (H. and A.) Greene	Yerba Santa	Leaves	Light yellowish green	5.4	0.2	22.04	3.86	Medium brownish green	Pleasant, aromatic, characteristic	Clean
2156	<i>Eriodictyon californicum</i> (H. and A.) Greene	Yerba Santa	Leaves	Medium grayish green	7.1	0.5	19.36	4.18	Medium brownish green	Pleasant, aromatic, characteristic	Clean
2644	<i>Eryngium aquaticum</i> L.	Water Eryngo	Roots	Medium brown	14.4	5.1	2.56	0.50	Light green-yellow	Slightly rancid; suggestive of oilcloth	Fairly clean
2218	<i>Eucalyptus globulus</i> Labillardier	Eucalyptus	Leaves	Med. light green	4.6	0.4	16.28	2.10	Dark brown-green	Characteristic	Clean
2171	<i>Eucalyptus globulus</i> Labillardier	Eucalyptus	Leaves	Medium green	4.5	0.3	16.38	2.20	Dark olive-green	Characteristic	Clean
2656	<i>Euonymus atropurpureus</i> Jacq.	Wahoo	Old stem bark	Light gray	12.5	0.8	3.86	0.20	Light brownish green	Slightly aromatic, sweetish	Clean
2444	<i>Euonymus atropurpureus</i> Jacq.	Wahoo	Young stem bark	Medium light greenish gray	4.3	0.2	4.02	0.16	Medium brownish green	Slightly aromatic, sweetish, fatty	Clean
2030	<i>Euonymus atropurpureus</i> Jacq.	Wahoo	Young stem bark	Medium light greenish gray	6.5	0.4	4.00	0.18	Medium brownish green	Slightly aromatic, sweetish	Clean
2640	<i>Euonymus atropurpureus</i> Jacq.	Wahoo	Twigs	Medium greenish	12.7	0.1	3.16	0.10	Brown-green	Slightly aromatic, sweetish	Clean
2721	<i>Euonymus atropurpureus</i> Jacq.	Wahoo	Root bark	Light gray	9.1	3.7	3.82	0.18	Light brown-yellow low	Fatty, slightly acid and aromatic	Fairly clean
1998	<i>Euonymus atropurpureus</i> Jacq.	Wahoo	Root bark	Medium brown	8.0	2.1	4.98	0.18	Reddish orange	Fatty, slightly sweetish, aromatic	Fairly clean
2534	<i>Euonymus atropurpureus</i> Jacq.	Wahoo	Root bark	Medium brown	4.0	0.8	2.18	0.14	Reddish orange	Fatty, slightly sweetish, aromatic	Clean
1995	<i>Eupatorium capillifolium</i> (Lam.) Small	Hogweed	Leaves	Dark brown	11.9	0.8	3.02	0.26	Med. brown-green	Musty, aromatic	Clean
2377	<i>Eupatorium perfoliatum</i> L.	Boneset	Herb	Medium green	7.5	0.8	13.74	1.60	Dark green	Sweetish, aromatic, characteristic	Clean
2519	<i>Eupatorium perfoliatum</i> L.	Boneset	Flowering tops	Medium green.	15.3	7.1	12.20	1.30	Med. dark green	Sweetish, characteristic, slightly suggestive of buchu	Fairly clean
2293	<i>Eupatorium purpureum</i> L.	Queen of the Meadow	Root	Light grayish brown	11.2	5.6	4.02	0.76	Very light greenish brown	Sweet, fruity, very aromatic	Fairly clean
2051	<i>Eupatorium purpureum</i> L.	Queen of the Meadow	Root	Light grayish brown	30.7	25.4	1.98	0.52	Very light green yellow	Musty, sawdust, butyric	Dirty, very poor sample
2364	<i>Eupatorium purpureum</i> L.	Queen of the Meadow	Root	Light grayish brown	12.1	4.7	5.08	1.10	Very light green-brown	Sweet, fruity, very aromatic	Fairly clean

Lab. No.	Scientific Name.	Trade Name.	Part employed.	Ash.			Ether extract.			Remarks
				Total.	Acid-insolu-ble.	Vola-tile.	Color.	Odor.		
2375	<i>Eupatorium purpureum</i> L.	Queen of the Meadow	Leaves	7.85	1.6	11.28	0.62	Dark green	Slightly aromatic	Clean
2499	<i>Eupatorium purpureum</i> L.	Queen of the Meadow	Leaves	10.5	1.6	10.18	0.74	Dark green	Slightly aromatic	Clean
2593	<i>Eupatorium urticaefolium</i> Reichard	White Sauricle	Root	10.1	4.5	5.66	0.18	Light greenish yellow	Earthy	Rather dirty
2660	<i>Fagus grandifolia</i> Ehrh.	Beech	Leaves	5.6	1.0	4.36	0.10	Med. dark green	Suggestive of rose	Clean
2535	<i>Fragaria vesca</i> L.	Strawberry	Leaves	4.9	0.7	8.36	0.64	Very dark green	Aromatic; somewhat suggestive of Yerba Santa	Clean
2635	<i>Frasera walteri</i> Michx.	Amer. Colombo	Root	4.7	0.5	3.64	0.20	Bright yellow	Similar to lightning bugs, hydrastis	Clean
2002	<i>Frasinus americana</i> L.	White Ash	Root bark	9.4	2.0	3.40	0.16	Whitish, nearly colorless	Fairly clean	
2536	<i>Frasinus americana</i> L.	White Ash	Tree bark, rosed	4.5	0.3	2.40	0.14	Whitish, nearly colorless	Clean	
2290	<i>Galium aperine</i> L.	Cleavers	Herb (largely stems)	12.8	1.8	3.26	0.05	Dark green	Slightly aromatic	Clean; large amount of stems normal
2511	<i>Galium aperine</i> L.	Cleavers, 6 leaf	Herb (largely stems)	11.0	0.7	2.48	0.12	Dark green	Slightly aromatic	Clean; large amount of stems normal
2503	<i>Galium tinctorium</i> L.	Cleavers, 4 leaf	Herb (largely stems)	6.9	1.1	4.96	0.10	Medium green	Aromatic, suggestive of coumarin	Clean; large amount of stems normal
2565	<i>Gaultheria procumbens</i> L.	Wintergreen	Herb (40% stems)	2.8	0.1	5.67	0.20	Medium green	Characteristic, methyl salicylate	Clean
2715	<i>Gelsemium sempervirens</i> Ait.	Jessamine	Root	2.7	1.2	2.02	0.14	Light yellow-green		Clean
2561	<i>Gelsemium sempervirens</i> Ait.	Jessamine	Leaves	4.7	0.9	9.08	0.22	Medium green	Suggestive of coumarin slightly acid	Clean
2028	<i>Gentiana quinquefolia</i> L.	Blue Gentian	Herb (60% stems)	4.3	0.7	3.69	0.12	Medium dark green	Strong, somewhat unpleasant	Clean; large amount of stems normal
2273	<i>Ceranium maculatum</i> L.	Cranesbill	Root	8.2	0.3	1.20	0.04	Light brownish orange		Clean
2035	<i>Ceranium maculatum</i> L.	Cranesbill	Root	10.7	1.0	0.64	0.04	Light brownish orange		Clean

2351	<i>Geranium maculatum</i> L.	Cranesbill	Root	Light reddish brown	10.1	2.9	0.80	0.08	Light brownish orange	Slightly dirty
2366	<i>Glecoma hederacea</i> L.	Ground Ivy	Root (40% stems)	Medium brownish green	16.8	5.3	5.16	0.26	Very dark brownish green, nearly black	Sour, suggestive of catnip
2277	<i>Glecoma hederacea</i> L.	Ground Ivy	Root (45% stems)	Medium brownish green	15.0	1.7	5.12	0.32	Very dark brownish green, nearly black	Strong, similar to catnip
2651	<i>Glecoma hederacea</i> L.	Ground Ivy	Root (45% stems)	Medium brownish green	16.7	3.0	3.82	0.15	Very dark brownish green, nearly black	Faint, similar to catnip
2078	<i>Gleditsia triacanthos</i> L.	Honey Locust	Tree bark	Medium light brown	9.4	2.0	4.00	0.14	Light brown	Sweetish, pleasant, aromatic
2052	<i>Gleditsia triacanthos</i> L.	Honey Locust	Leaves	Medium greenish brown	8.2	0.8	5.80	0.16	Medium dark green	Clean
2299	<i>Gnaphalium obtusifolium</i> L.	Life Everlasting	Flowering tops (35% stems)	Medium grayish brown	5.5	0.7	3.80	0.21	Medium brownish green	Slightly aromatic, somewhat suggestive of spikenard and elecampane
2043	<i>Gnaphalium obtusifolium</i> L.	Life Everlasting	Flowering tops (40% stems)	Medium light greenish brown	7.8	1.5	4.94	0.10	Medium brownish green	Clean; larger amount of stems
2430	<i>Gnaphalium obtusifolium</i> L.	Life Everlasting	Flowering tops (35% stems)	Medium light greenish brown	5.7	0.6	4.57	0.26	Medium brownish green	Slightly aromatic, somewhat suggestive of spikenard and normal
2037	<i>Gordonia lasianthus</i> L.	Loblolly Bay	Bark	Medium reddish brown	4.1	0.3	2.80	0.28	Yellow-orange	Clean
2412	<i>Gossypium herbaceum</i> L.	Cotton	Root bark	Medium brown	4.4	1.2	3.14	0.28	Reddish brown	Earthy, sawdust-like
2691	<i>Gossypium herbaceum</i> L.	Cotton	Root bark	Medium brown	5.0	0.7	3.28	0.28	Reddish brown	Earthy, sawdust-like
2321	<i>Hamamelis virginiana</i> L.	Witch Hazel	Leaves	Light olive-green	5.4	1.0	4.04	0.20	Dark green	Aromatic, tea-like, sour
2670	<i>Hamamelis virginiana</i> L.	Witch Hazel	Leaves	Light olive-green	5.1	1.0	3.04	0.08	Dark green	Aromatic, tea-like, sour
2402	<i>Hamamelis virginiana</i> L.	Witch Hazel	Leaves	Light olive-green	6.9	2.7	5.76	0.14	Dark green	Aromatic, tea-like, sour
2065	<i>Hamamelis virginiana</i> L.	Witch Hazel	Tree bark, rossed	Light brown	5.0	0.5	1.30	0.18	Light brownish green	Sourish
13	<i>Hamamelis virginiana</i> L.	Witch Haze	Tree bark	Medium brown	4.8	0.1	3.40	0.34	Light green	Sourish, faintly aromatic
2029	<i>Hedeoma pulegioides</i> (L.) Pers.	Pennyroyal	Leaves	Light olive-green	8.0	0.7	6.72	0.36	Very dark olive-green	Characteristic, strong
2311	<i>Hedeoma pulegioides</i> (L.) Pers.	Pennyroyal	Leaves	Medium grayish green	6.2	0.6	5.56	0.33	Medium dark green	Characteristic, strong
2410	<i>Hedeoma pulegioides</i> (L.) Pers.	Pennyroyal	Leaves	Medium grayish green	7.3	1.0	3.78	0.44	Medium brownish green	Characteristic, strong

(To be concluded)