

Its hydrochloride is soluble in the same solvents and is hygroscopic. Like sempervirine and gelsemidine, it is in small quantity. It is separated from the ammonia-soluble, resinous matter (once thought to be alkaloid) by means of water or acidulated water in which it is soluble.

As above stated, it is believed that this investigation will aid in the determination of a satisfactory process for the standardization of the drug and its preparations. Conjointly with this work Professor L. D. Havenhill is working out such a process of standardization.

The authors would like to add a word with regard to the importance of our understanding the chemical constitution of such a drug as Gelsemium, as this drug is one that powerfully impresses the nervous system. It is said that small medicinal doses relax the muscles and allay nervous irritation. Therapeutically, Gelsemium is said to act upon the cerebrospinal nervous centers and it has found much favor among the eclectic practitioners who claim that the drug "possesses a perfect control over the nervous system, removing nervous irritability more completely than any other known agent."

Since the habit-producing drugs (of the narcotic and hypnotic group) have caused much alarm, evidenced by legislation, it is wise for chemists and therapeutists to endeavor, as far as possible, to employ a substitute. It is believed that if the drug in question is more thoroughly studied by therapeutists it will be found more valuable, than it is deemed at present, as one of the important agents in the armamentarium of the practitioner.

THE PERMANENCY AND DETERIORATION OF SOME VEGETABLE DRUGS TWENTY-FIVE YEARS OF AGE.*

BY E. N. GATHERCOAL.

Some two years ago opportunity offered for the examination of a collection of crude drugs that had been prepared some twenty-five years ago by W. K. Higley of Northwestern University School of Pharmacy, Chicago. These drugs were placed in glass-stoppered bottles kept in cases more or less exposed to the light. For a number of years, at least, none of the bottles have been opened. While the conditions under which these drugs have been kept are not exactly similar to the conditions met with in drug stores, in many respects they are similar to those in stores where crude drugs are kept in glass. Of course, where drugs are kept in wooden drawers or boxes, or in paper packages, the liability to deterioration is perhaps increased.

This paper is deficient in some respects. It will be noted that a number of assayable drugs have not been assayed. This was due in some cases to an insufficiency of material, in others to lack of time on the part of the author. Despite the fact that spare moments for two years have been devoted to this work, many of the drugs have not received nearly the attention they should have had.

A number of important drugs are omitted because samples of them were not present in the collection examined.

Among the drugs fully U. S. P. there occur, much to the author's surprise, Digitalis, which is of a strength one and a half times the present pharmacopoeial

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requirement, and Belladonna leaves well above the U. S. P. strength. Unfortunately the assay of Hyoscyamus and of Stramonium was not completed owing to lack of material in the samples. Both have been placed in the non-U. S. P. column because of their very brown color. However, the Belladonna leaves were also brown.

The Umbelliferous fruits, Anise, Caraway, Fennel and Celery, were all fairly good and would fully correspond with a good commercial grade of the same drugs today.

On the other hand the Labiate herbs were uniformly much depreciated. Peppermint was especially poor, Spearmint somewhat better, Catnip poor.

Other leaf drugs that had suffered appreciable depreciation were Buchu, Boneset, Coltsfoot, Witchhazel (?), Matico, Gaultheria and probably Pilocarpus. Humulus was brown in color but possessed an odor and taste characteristic of fresh, good hops. Lupulin also had a brown color but a fine odor and taste. Possibly repeated exposures to air are required to produce the disagreeable odor of deteriorated hops and lupulin.

Several samples of Bitter Orange peel, ribbons and quarters, Sweet Orange peel and Lemon peel were present and in each instance showed a marked depreciation in color and in odor, but, rather oddly, the odor was in no instance terebinthinate but always citrous. On the other hand, Prickly Ash berries, N. F., which normally have an odor of citral, were decidedly terebinthinate.

Some of the drugs, notably Colchicum seed, Gambir, Viburnum opulus, Rhamnus cathartica and possibly Asafoetida, the English Aconite and the first sample of Lobelia, have fallen into the non-U. S. P. column because they were of poor quality when placed in the collection.

Fully U. S. P.*	Not fully U. S. P.*	Remarks.
1	Acontium, Ger.	Good appearance; assay, 0.55% (U. S. P. 0.5%).
2	Aconitum, Eng.	Small, short, thick roots, very gray externally; infested with insects; taste not fully acid; assay, nil. (U. S. P. 0.5%).
3	Anisum, Ital.	Odor and taste very good; free from conium, excess stem or clay.
4	Arnica	Dull gray-brown color; yellow florets all faded to brown; odor much weakened.
5	Asafoetida	Very dark red-brown; odor good; 57% soluble in alcohol. (U. S. P. 60%).
6	Aspidosperma	
7	Aurantii Amari Cortex, ribbons	Yellowish brown, inner surface light brown; taste bitterish, weakly pleasantly aromatic, not terebinthinate.
8	Belladonnae Folia	Brownish color; assay, 0.32% (U. S. P. 0.30%).
9	Belladonnae Radix	Assay, 0.53%. (U. S. P. 0.45%).

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Fully U. S. P.*	Not fully U. S. P.*	Remarks.
10	Benzoinum, Sumatra	Very red externally; on freshly fractured surface for some distance inward from edge the tears were very reddish; odor good; crystals of benzoic acid on interior of bottle.
11	Buchu, long	Color much faded; odor and taste much weakened though characteristic.
12	Buchu, short	
13	Calumba	Good yellow color; very bitter.
14	Cannabis, American	Not assayed. (U. S. P. 0.03 mil of fluidextract.)
15	Cannabis, Indica	Not assayed. (U. S. P. 0.03 mil of fluidextract.)
16	Cantharis, Russian	Badly infested with insects; not assayed. (U. S. P. 0.6%)
17	Capsicum	Genuine African; color much faded; odor somewhat rancid, "oily," taste very pungent.
18	Carum	Emodin tests, good.
19	Caryophyllus	
20	Cascara Sagrada	
21	Chondrus	
22	Cimicifuga	
23	Cinchona	
24	Cinchona Rubra	Strongly acrid. Fine specimen of flat bark; assay, 6.3%. (U. S. P. 5%)
25	Cinnamon. Saigon.	Assay, 7.2%. (U. S. P. 5%)
26	Cinnamon. Zeylon.	Thick quill. Better in odor and taste than present commercial article.
27	Coccus, silver	Large, plump, not heavily coated.
28	Colchici Cormus	Not assayed. (U. S. P. 0.35%)
29	Colchici Semen	Not assayed. (U. S. P. 0.45%); small, shrivelled; many foreign seeds.
30	Digitalis	Color good; taste bitter; assay (by Dr. J. M. Francis of Detroit) M. L. D. 0.004 mil. (U. S. P. 0.006 mil.)
31	Eriodictyon	Odor and taste very good, color somewhat faded, veins not green.
32	Eucalyptus	Inner surface very dark brown; emodin test not strong.
33	Foeniculum	
34	Frangula	
35	Galla	Very dark and hard; much foreign matter; soluble in alcohol 43%. (U. S. P. 65%)
36	Gambir	
37	Gelsemium	Very stemmy.
38	Gentiana	
39	Glycyrrhiza, Russian	
40	Glycyrrhiza, Spanish	
41	Granatum, stembark	
42	Grindelia Robusta	

Fully U. S. P.*	Not fully U. S. P.*	Remarks.
43 Guaiacum		Very dark greenish externally; some chips present.
44 Guarana		Assay, 5%. (U. S. P. 4%.)
45	Humulus	Light reddish brown; odor much weakened but not disagreeable nor valerian-like.
46 Hydrastis		Assay, 2.8%. (U. S. P. 2.5%.)
47	Hyoeyamus	Very brown; not assayed. (U. S. P. 0.065%.)
48 Ipecacuanha, Cartagena		Assay, 1.75%. (U. S. P. 1.75%.)
49 Ipecacuanha, Rio		Assay, 2.05%. (U. S. P. 1.75%.)
50 Jalap		Assay, 10.5%. (U. S. P. 7%.)
51 Kino		
52	Lobelia, first sample	Straw-colored, very stemmy, slightly acrid, not sternutatory.
53 Lobelia, second sample		Strongly acrid.
54 Lycopodium		
55 Maltum		It converted five times its weight of starch into sugars. (U. S. P. 5 times.)
56 Manna, large flake		Yellow to light brown external color.
57 Manna, small flake		
58 Matricaria		
59	Mentha Piperita	Color much faded; odor weak; stemmy.
60	Mentha Viridis	Brown in color; odor and taste strong and characteristic.
61 Mezereum		Acridity rather slight.
62 Myrrha		Many pieces have a dark-red, soft, granular exudation.
63 Nux Vomica		Not assayed. (U. S. P. 2.5%.)
64 Petroselinum		
65 Physostigma		Not assayed. (U. S. P. 0.15%.)
66	Pilocarpus (Jaborandi)	Not assayed. (U. S. P. 0.6%); very brown.
67 Podophyllum		Assay, 3.7% resin. (U. S. P. 3%.)
68 Prunus Virginiana		Contains 0.078% HCN; color dark reddish.
69 Pyrethrum		
70 Quassia		
71 Resina		
72 Rheum		
73 Rosa Gallica		Color, odor and taste exceptionally good.
74 Sanguinaria		
75 Sarsaparilla, Honduras		
76 Sarsaparilla, Mexican		
77 Sassafras		
78 Scammoniac Radix		Genuine Levant; not assayed. (U. S. P. 8%.)
79 Scilla		Not assayed. (U. S. P., M. I. D 0.006 mil.)
80 Senega		
81 Senna, Alexandria		

Fully U. S. P.*	Not fully U. S. P.*	Remarks.
82 Senna, India		
83 Serpentaria, Virginia		Odor and taste strongly camphoraceous.
84 Spigelia		Dirty, but free from Ruellia, etc.
85 Staphisagria		
86 Stillingia		
87	Stramonium	Brown color; heavy narcotic odor; not assayed. (U. S. P. 0.25%)
88	Strophanthus, first sample	Brown to dark brown; not assayed. (U. S. P. 0.00006 mil).
89	Strophanthus, second sample	Small, pointed, very brown seeds; oily odor, strongly bitter; not assayed. (U. S. P. 0.00006 mil.) No greenish color with sulphuric acid.
90 Sumbul		
91 Triticum		
92 Uva Ursi		
93 Valeriana, Belgian	}	Clean, good odor and taste.
94 Valeriana, German		
95 Valeriana, English		
96 Veratrum Viride		
97 Viburnum Prunifolium		
98 Xanthoxylum, Northern		
99 Xanthoxylum, Southern		Unscraped; strongly pungent.
100 Zingiber, African		
101 Zingiber, Jamaica		
Fully N. F.**	Not fully N. F.	Remarks.
1 Absinthium		
2 Agaricus		Very bitter.
3	Aletris	Badly infested; rhizomes almost destroyed.
4	Angelicae Radix	Taste rather harsh, acrid, not so aromatic as recent drug.
5 Apii Fructus		Color and odor fair; taste rather strong and disagreeable.
6	Asclepias	Color dark reddish; odor not good; taste slight.
7 Baptisia		
8	Berberis, first sample	No yellow internal color; somewhat bitter.
9 Berberis, second sample		Yellow internally, very bitter.
10	Calendula	Much faded; odor pleasant, slightly aromatic and bitter.
11	Cataria	Faded; odor very poor.
12 Caulophyllum		
13 Centaurium		Red color of petals bright; stems and leaves faded to straw color; odor pleasant; taste aromatic and bitter.
14 Cocculus Indicus		
15	Coffea Tosta	Odor strong, disagreeable; not assayed. (N. F. assay 1%)
16 Coptis		Very fine yellow color and bitter taste.
17 Crocus		Color, odor and taste very good; not adulterated.

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Fully N. F.**	Not fully N. F.	Remarks.
18 Cypripedium		Odor heavy.
19 Dioscorea		
20	Eupatorium	Color much faded; taste slightly bitter.
21	Farfara	Upper surface of leaves very dark brown.
22 Galanga		Odor and taste aromatic; not pungent.
23 Geranium		Fine sample; very reddish.
24	Hamamelidis Folia	Very red brown in color.
25 Helonias		
26 Ignatia		Not assayed. (N. F. assay 2%.)
27 Inula		Very fine.
28 Iris (Florentine Orris)		Very fine appearance and odor.
29 Juglans		
30 Kava		
31 Leptandra		
32 Lupulinum		Very good color and odor as of freshly dried Lupulin.
33 Mastic		Color yellowish brown.
34	Matico	Color much faded to a brown; odor and taste very slightly pepper-like.
35 Pareira		
36 Petroselin Radix		
37 Quillaja		
38	Rhamnus Cathartica	Fruits of <i>Rhamnus tinctorius</i> instead of <i>Rhamnus catharticus</i> .
39 Sambucus		Color good; odor and taste very slight; somewhat stemmy.
40 Scoparius		Color but slightly faded; taste strongly bitter.
41 Trillium		Taste very acrid.
42	Viburnum Opulus	Bark of <i>Acer spicatum</i> .
43	Xanthoxyli Fructus	Stemmy; odor terebinthinate, not of citral; no tingling sensation after chewing.

SUMMARY.

1. A collection of crude drugs in glass-stoppered bottles prepared twenty-five years ago was examined for the quality of the drugs and compared with the present U. S. P. and N. F. requirements.

2. Most of the drugs were very well preserved and fully met the present standards, notably: Aconite, Belladonna Leaves, Cinchona, Cinnamon, Digitalis, Lobelia, Malt, Matricaria, Prunus Virginiana, Rosa Gallica, Senna, Valerian, Ginger, Spanish Saffron, Florentine Orris, the Umbelliferous fruits, etc.

3. Among the drugs much depreciated were Orange and Lemon peels, the Labiate herbs (Peppermint, Spearmint and Catnip), and a number of leaf drugs (Buchu, Boneset, Coltsfoot, Witchhazel, Matico, Gaultheria and probably Pilocarpus).

4. Humulus and Lupulin, while brown in color, possessed a very fresh characteristic odor, not at all valerian-like.

5. A number of the drugs were adulterated or of poor quality when placed in the collection, notably Colchicum seed, Gambir, Viburnum Opulus (*Acer spicatum*), Rhamnus Cathartica (*Rhamnus tinctorius*), Asafoetida, English Aconite and one sample of Lobelia.