

NOTES ON THE PREPARATION OF AROMATIC FLUIDEXTRACT OF CASCARA SAGRADA.*

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At the suggestion of the U. S. P. Sub-Committee on Extracts, Fluidextracts and Tinctures, several formulas and methods for preparing Aromatic Fluidextract of Cascara were followed experimentally together with some modifications thereof.

The formulas suggested by the committee were:

	A.	B.	C.
Cascara Sagrada (crushed)*	1000 Gm.	....	....
Cascara Sagrada (coarse ground)	....	1000 Gm.	1000 Gm.
Magnesium Oxide	240 Gm.	150 Gm.	90 Gm.
Pure Ext. of Glycyrrhiza	40 Gm.	....	40 Gm.
Fluidextract of Glycyrrhiza	....	125 cc.	....
Gluside	2 Gm.	1 Gm.	1 Gm.
Glycerin	....	300 cc.	200 cc.
Alcohol	200 cc.	125 cc.	100 cc.
Flavor (for details see below)	....	....	....
Water to make	1000 cc.	1000 cc.	1000 cc.

* Coarse ground cascara was tried in formula "A" but found unsatisfactory as it clogged the percolator.

Formula "A" directed mixing the drug with the magnesium oxide and boiling the mixture with 6000 cc. of water for six hours; transferring to a percolator and percolating until exhausted; concentrating the percolate to 1000 cc. and adding sufficient ammonia water to give a distinct ammoniacal odor; then continuing evaporation to 700 cc. and adding the remaining ingredients, bringing the volume of the finished product to 1000 cc. by addition of water.

Formulas "B" and "C" directed moistening the cascara and magnesium oxide mixture with 2000 cc. of boiling water and setting the mixture aside in a percolator for 40 to 48 hours; then percolating. This amount of moistening liquid seemed to be excessive and interfered with even distribution or packing, thus resulting in poor extraction when both coarsely ground and crushed drug was used.

Because of the unsatisfactory results obtained, these experiments were repeated, using coarse ground drug and less water for moistening (1000 cc.) and allowing the drug to stand in a covered container for 24 hours before transferring to a percolator. With this modification, satisfactory flow and extraction were secured.

When the fluidextracts were finished, each was divided into four portions of 250 cc.

Three flavors were used in flavoring three portions of each fluidextract, the fourth portion being left unflavored.

Flavor per 1000 Cc.	1.	2.	3.
Oil of Anise	0.65 cc.	0.20 cc.	1.0 cc.
Oil of Coriander	0.15 cc.	0.15 cc.	0.1 cc.
Oil of Wintergreen	0.10 cc.	....	....
Fluidextract Angelica	....	....	2.0 cc.

* Section on Practical Pharmacy and Dispensing, A. PH. A., Toronto meeting, 1932.

The completed samples were labeled A-1, A-2, A-3, A-4,—B-1, B-2, etc., the letter indicating the formula used and the number indicating the flavor, No. 4 in each case representing the unflavored samples.

Odor and taste comparisons were made on unflavored as well as flavored finished products. The odor of the "A" series did not appear to be as clean and pleasant as that of the other fluidextracts. This difference in odor may possibly be due to the use of ammonia water at one stage of the evaporation after which a change in odor was noticed while the liquid was being concentrated. The odors of "B" and "C" were aromatic and clean, with "B" slightly smoother and less penetrating than the "C" series.

In tasting the unflavored samples the impression was gained that "A" might be preferable to "B" and "C," as three of five who tasted the products felt that "A" would make the best fluidextract. It also seems that the smallest amount of magnesium oxide (90 Gm.) is sufficient to satisfactorily debitterize the drug. (Confirms earlier work done in this laboratory.)

The larger amount of glycerin in "B" may be responsible for the smoother or softer odor and flavor of this preparation, also the glycerin content may be greater than is needed. Bringing the glycerin content of "C" to 25% seemed to make this sample smoother and apparently preferable to "B," while increasing its alcohol content seemed to make it taste warmer without otherwise affecting the taste.

Four of five people who tasted the flavored fluidextracts preferred the No. 3 flavor. We consider wider examination desirable to obtain correct choice of flavor, and further experiments with flavoring ingredient quantities may indicate that better combinations can be produced.

Two of the formulas directed the use of Extract of Licorice. Samples were obtained from three different manufacturers and quite a variation in odor, color and taste was noticed in these extracts. We therefore suggest the use of Fluidextract of Licorice instead of the extract, as we believe it will lead to greater uniformity in taste and appearance.

Experience in this laboratory has shown that 10% of alcohol satisfactorily preserves this preparation, hence we consider it sufficient.

In addition to preparing the foregoing fluidextracts we determined the total solids in 10 cc. of percolate of fluidextract strength when cascara-magnesium oxide mixtures were extracted by methods analogous to those given under experiments "A," "B" and "C."

	A. Crushed Drug.	Crushed Drug.	B. Coarse Ground Drug.	Crushed Drug.	C. Coarse Ground Drug.
Determination I	3.22 Gm.	2.31 Gm.	3.08 Gm.	2.52 Gm.	3.18 Gm.
Determination II	3.20 Gm.	2.32 Gm.	3.09 Gm.	2.55 Gm.	3.08 Gm.
Average	3.21 Gm.	2.315 Gm.	3.085 Gm.	2.535 Gm.	3.13 Gm.

Crushed bark (as used in "A") and coarsely ground bark (as used in "B" and "C") mixed with 240 Gm. of magnesium oxide per 1000 Gm. of drug were also extracted by extraction methods as used in "A" and "C," respectively, and total solids determinations made on the percolates concentrated to fluidextract strength with the following results:

Process "A" (crushed bark)	3.21 Gm. in 10 cc.
Process "C" (coarse ground bark)	3.22 Gm. in 10 cc.

Hence from the standpoint of extraction efficiency the two methods are equally good, providing percolation is carried to exhaustion of the drug. Percolate from "A," however, was lighter in color even though its extractive content was the same. Therefore, it appears that the magnesium oxide affects the very coarse crushed drug differently so far as color is concerned than the less coarse ground drug. More rapid extraction was apparent in "C" as indicated by a higher total solid content in the first percolate taken from the drug.

During percolation, difficulty was experienced with clogging of percolators in two of four trials with the method of boiling the crushed drug (Method A). This method appears to be suitable for large scale operation but for smaller scale production we suggest the moistening of 1000 Gm. of coarsely ground drug and the required magnesium oxide with 1000 cc. of boiling water and allowing it to stand in a covered vessel for 24 hours before packing in a percolator.

Our experiments and observations lead us to suggest the following formula as one worthy of consideration in further experiments:

Cascara Sagrada, in coarse powder	1000.0 Gm.
Fluidextract of Licorice	125.0 cc.
Magnesium Oxide	90.0 Gm.
Gluside	1.0 Gm.
Glycerin	250.0 cc.
Alcohol	100.0 cc.
Oil of Anise	1.0 cc.
Oil of Coriander	0.1 cc.
Fluidextract of Angelica	2.0 cc.
Water to make	1000.0 cc.

Mix the cascara with the magnesium oxide and moisten in a dish with 1000 cc. of boiling water. Cover the dish and allow to stand for 24 hours. Transfer to a percolator and percolate with boiling water until the drug is exhausted; evaporate the percolate as received to 500 cc. When cold, add the glycerin and the alcohol in which the gluside and flavoring ingredients have been previously dissolved. Finally make the preparation up to 1000 cc. with water.

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THE THERAPEUTIC ACTION OF PYRULARIA OLEIFERA.*

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Pyrrularia oleifera A. Gray has been given a number of common names: Crazy nut—it is said to be given to demented persons to make them sane; mother-in-law nut—said to be one way in which to eliminate mothers-in-law; and oil nut—probably on account of the large oil content of the fruit which contains 61.94% of an acrid fixed oil.

Pyrrularia oleifera is a member of the *Santalaceæ* and its habitat is in rich mountain woodlands in the Alleghenies, south of the Mason-Dixon line. It

* Scientific Section, A. P. H. A., Toronto meeting, 1932.