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## VEHICLES FOR MEDICINES.*

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### VI. SYRUP OF CINNAMON.

Syrup of cinnamon has been recommended as an "almost specific" vehicle for salicylates. As the syrup of cinnamon has a brown color, its use would coincide

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with the idea expressed by Lucas and Henderson,[1] to use colored vehicles, such as syrup of glycyrrhiza or compound syrup of sarsaparilla, for salicylates in order to make the discoloration that salicylate undergoes on keeping, less obvious to the patients.

Dissolving 0.30 Gm. of sodium salicylate in 4 cc. of syrup of cinnamon yields a preparation that is disappointedly disagreeable to our taste. As the syrup of cinnamon itself has an astringent and somewhat acrid taste, the disagreeableness may be due to the tannin and cinnamic acid present in the cinnamon, for the syrup is prepared by extraction of the cinnamon with alcohol (almost 10%) in cinnamon water. We have noticed that the presence of even a small quantity of acid brings on an acridity in salicylate solutions, presumably due to liberation of salicylate ions.

Inasmuch as this syrup is merely intended as a flavoring vehicle, it may well be questioned why we should make this preparation from the drug itself, and include various undesirable, because disagreeably tasting, ingredients, when the oil of cinnamon represents the cinnamon flavor so fully.

### EXPERIMENTS ON FLAVORING A SYRUP.

We therefore set about to experiment on the question of preparing a syrup directly from the oil itself, starting with cinnamon water, and using it in the percolation of the sugar. (*Process 1.*)

| | |
|---|---|
| Cinnamon Water | 450.0 cc. |
| Sucrose | 850.0 Gm. |

Percolate until 1000 cc. of the syrup are obtained. This results in a clear, rather mildly cinnamon-flavored syrup.

With the hope of increasing the strength of the preparation and saving the clarification of the cinnamon water by filtration through absorbent material, we shook up oil of cassia with water and percolated the sugar with this mixture. (*Process 2.*)

| | |
|---|---|
| Oil of Cassia | 1.0 cc. |
| Distilled Water | 450.0 cc. |
| Mix by vigorous agitation and percolate through Sucrose | 850.0 Gm. |
| until 1000 cc. of the syrup are obtained. | |

The resulting syrup is slightly opalescent, but practically clear, and of stronger flavor than that resulting from Process 1, and of pleasantly burning taste.

To determine whether we might introduce a still larger quantity of cinnamon oil into the syrup by better subdivision of the oil of cassia, we triturated the sugar with the volatile oil and percolated with water. (*Process 3.*)

| | |
|---|---|
| Oil of Cassia | 1.0 cc. |
| Sucrose | 850.0 Gm. |
| Triturate thoroughly and percolate with Distilled Water | 450.0 cc. |
| until 1000 cc. of the syrup are obtained. | |

This yielded a decidedly turbid fluid of rather strong cinnamon flavor and taste. By reducing the oil of cassia to one-fourth the amount that is employed in the preparation of cinnamon water and distributing this oil over sucrose, we secured a preparation practically identical in appearance, odor and taste with that yielded by Process 2. It is obvious, therefore, that Process 3 is more economical in

[1] *Canadian Medical Journal*, April 1931

the use of the oil of cassia than are any of the previously enumerated processes, obviously because of the presenting of a larger surface of the volatile oil to the solvent than in the other methods.

In an attempt to possibly still further increase the cinnamon content of the preparation—though this seems hardly necessary—we dissolved the oil of cassia in a small proportion (5%) of alcohol and distributed the alcoholic solution over the sugar which was then submitted to percolation with water in the preparation of the syrup. (*Process 4.*)

| | |
|---|---|
| Oil of Cassia | 1.0 cc. |
| Alcohol | 50.0 cc. |
| Triturate this thoroughly with Sucrose | 850.0 Gm. |

Then percolate with Distilled Water until 1000 cc. of the syrup are obtained.

The result is surprising in that odor as well as taste are less prominent than in the syrups resulting in Processes 2 and 3.

In view of the above-stated facts, it is an interesting question as to what happens to the oil of cassia used in the various processes. In Process 1, in which cinnamon water was employed, the large excess of oil that was used was filtered out, being left in the absorbent material. In Process 2, in which the oil was shaken with the water, crude oil droplets were found on the walls of the funnel and on the cotton plug as could be clearly demonstrated by means of Sudan III. Process 3 secures better subdivision and distribution and therefore enables one to obtain identical results with those of Process 2 with the use of a smaller proportion of oil. In Process 4, there can be no doubt that a larger proportion of oil is in solution, for we are dealing with a better solvent and there certainly must be less loss of oil than in any of the previous processes, and yet the product appears to our senses decidedly weaker. The answer as to the reason for this remarkable discrepancy in results is probably to be found in the physical fact that a substance will not exchange a good solvent for a poor solvent. Hence, the oil of cassia is "disguised" better, *i. e.*, less prominent to odor and taste than it would be were it to find itself in supersaturated solution in a poorer solvent.

We, therefore, recommend consideration of the following formula for the syrup of cinnamon of the forthcoming National Formulary.

**SYRUPUS CINNAMOMI.**

**Syrup of Cinnamon.**

**Syr. Cinnam.**

| | |
|---|---|
| **Oil of Cassia** | **0.5 cc.** |
| **Compound Tincture of Cudbear** | **60.0 cc.** |
| **Sucrose** | **850.0 Gm.** |
| **Water, a sufficient quantity** | |
| **To make** | **1000.0 cc.** |

Distribute the oil of cassia over the sucrose by trituration in a mortar, and percolate with 390 cc. of water to which the compound tincture of cudbear has been previously added. Percolate until 1000 cc. of syrup are obtained.

PRESCRIPTION FOR SALICYLATE.

When we use the syrup thus prepared as a vehicle for salicylate with the addition of alkali, there is possibly a diminution of the cinnamon flavor of the syrup

by the addition of the just sufficient quantity of water to dissolve the salicylate and the alkali which should guard the salicylate against precipitation in the form of salicylic acid by the acid of the gastric juice. The following prescription might, therefore, be recommended: potassium bicarbonate having been chosen in preference over sodium bicarbonate because of its greater solubility in water.

| | | |
|---|---|---|
| ℞ | Sodium Salicylate | 10.0 Gm. |
| | Potassium Bicarbonate | 10.0 Gm. |
| | Cinnamon Water | 60.0 cc. |
| | Syrup of Cinnamon, enough to make | 120.0 cc. |

Mix and label: Teaspoonful in glassful of seltzer water every two hours.

One advantage of using the cinnamon syrup instead of colorless syrups is that the discoloration salicylate undergoes on standing is thereby rendered unnoticeable.

### IRON IN CINNAMON SYRUP.

Another advantage of our synthetic formula for syrup of cinnamon is that it could be used as a vehicle for iron salts, while the syrup at present official in the N. F. is out of the question for this purpose, because of "ink" formation. The following formula yields an actually delicious clear preparation.

| | | |
|---|---|---|
| ℞ | Iron and Ammonium Citrate | 10.0 Gm. |
| | Water | 10.0 cc. |
| | Syrup of Cinnamon (made from Oil of Cassia) to make | 120.0 cc. |

Mix and label: Teaspoonful in water three times a day after meals.

This would yield the average medicinal dose per teaspoonful. In view, however, of the much larger doses favored by clinicians, a tablespoonful, which might carry 1.5 Gm. of the medicament, would be more likely to produce striking results.

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## DRUG STORE LOCATION.*

BY I. K. ROLPH.[1]

Perhaps no kind of retail business is more sensitive to good or faulty location than the drug store. This is largely because the drug store, more than any other kind of store with a city-wide distribution, enters into competition with a great many other kinds of stores and because it is dependent, to varying degrees, upon both transient and resident patronage.

### TYPES OF LOCATIONS DEFINED.

There may be said to be five different types of retail locations, irrespective of kind of business. These five types of locations, each with its own definite characteristics, are: Central shopping district location, sub-center location, neighborhood location, string-street location and the "not concentrated" location. It is obvious that these location types are in relation to the retail structure of a city and, for that reason, are applicable to any large city. (Figure 1.) Further, because of

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* Section on Commercial Interests, A. PH. A., Washington meeting, 1934.

[1] Research Specialist, Bureau of Foreign and Domestic Commerce.