

EXPERIMENTS ON IMPROVING THE KEEPING QUALITIES OF CHALK MIXTURE.*

BY B. FANTUS AND C. M. SNOW.

The present formula for chalk mixture antedates the days of antiseptics. Originally known as *Julapium Cretaceum* of Bates, we find a formula for it in the "Proceedings of the Committee of Physicians to Thoroughly Reform the London Pharmacopoeia" (1744). This "Julapium" contained practically the same ingredients chalk mixture has to-day with the exception of the cinnamon oil; this addition, which not only made the mixture more pleasant but also increased its keeping qualities, we find for the first time in the "Edinburgh New Dispensatory" (1786), in which this preparation appears under the name of "*Potio Cretacea*." The Pharmacopoeia of the Massachusetts Medical Association (1808) contains practically the same formula under the name "*Mistura Carbonatis Calcis*," and this was taken over with some modification into the U. S. P. of 1820. Since then the formula has appeared in successive editions of the U. S. P., practically unmodified until 1880, when, after numerous unsuccessful attempts to improve the keeping qualities of the chalk mixture, the *Compound Chalk Powder* was introduced, which is permanent, to be used in the extemporaneous preparation of chalk mixture. This has eliminated any excuse on the part of the pharmacist to dispense any other than a freshly prepared mixture. It has not, however, done away with the possibility that the mixture might ferment while kept unduly long in the patient's house, particularly during the hot summer months when this medicine is most especially used. The mixture is furthermore objectionable from a medical point of view because it is illogical for the physician to administer sugar and acacia as ingredients of a medicine employed in fermentative diarrhea, in which condition he generally is careful to exclude all carbohydrate from the diet.

We therefore undertook experiments to determine whether it might be possible to improve the keeping qualities of the chalk mixture by eliminating its fermentable ingredients and using saccharin instead of sugar for sweetening. The quantity of saccharin required for this purpose is so minute as to be surely unobjectionable from the standpoint of toxicity. The following formula yielded a preparation that seemed to meet the requirements:

Prepared chalk.....	6.00 Gm.
Saccharin.....	0.02 Gm.
Cinnamon water.....	40.00 cc
Water, to make.....	100.00 cc

We got up a sufficient number of samples of this preparation to send to twenty-five of the leading pediatricists of this country, with request for comments, and were favored with replies from eighteen. All of those who were using chalk mixture were in sympathy with the proposed modification of the formula, excepting two. One of them objected to the absence of the suspending agent, as he employs the chalk mixture for the suspension of insoluble bodies like bismuth subcarbonate. This, it might be noted, is not really desirable, as the bismuth and acacia form on prolonged standing a cement-like sediment difficult to reincorporate in the mixture.

* Read before Section on Practical Pharmacy and Dispensing, A. Ph. A., Cleveland meeting, 1922.

Another practitioner made the surprising statement that he "had not experienced the fermentation referred to." This led us to study the keeping qualities of chalk mixture. We found that the mixture really does not decompose very rapidly; and, as the acid formed by the fermentation is neutralized by the chalk, the only change evident on standing is a progressive lessening and final loss of sweetness. There is no doubt, however, that the preparation now official contains good culture media for microorganisms, and is to that extent unhygienic.

Much to our surprise, we discovered that the saccharin-containing mixture was not as permanent as we had hoped. Especially when kept exposed to sunlight for quite some time, it developed an offensive odor reminding one somewhat of hydrogen sulphide or of illuminating gas, with progressive diminution and final loss of cinnamon flavor. Protected against light it does not decompose readily. As, however, the manner of keeping the mixture cannot be controlled after it has left the pharmacist's hands, the formula is not a satisfactory one.

There is little doubt that some other less reactive flavoring oil could be found that might be used instead of the cinnamon and would yield a permanent preparation. We have prepared saccharin-sweetened chalk mixture with anise water, fennel water and peppermint water, and so far have not noted any decomposition. The time for observation has not yet been sufficiently long to enable us to vouch for the absolute permanence of these preparations. However, we have little doubt that, should the use of saccharin as a sweetening agent be desired, a suitable flavoring could be found.

CONCLUSIONS.

1. The now official chalk mixture is objectionable because of its carbohydrate content.
2. A mixture from which the fermentable ingredients are eliminated, and in which saccharin is used as a sweetening agent is objectionable because of a decomposition that occurs, especially under the influence of sunlight, which results in the substitution of an offensive flavor for that of cinnamon.
3. Some other less reactive flavoring oil than that of cinnamon would have to be used if saccharin were to be employed as the sweetening agent.

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SOME INCOMPATIBILITIES OF ASPIRIN.*

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In the report of the Scientific Section of the American Drug Manufacturers' Association for the present year is given a list of some incompatibilities, or supposed incompatibilities, of Aspirin. Some of these have been chosen for experimentation.

Acetylsalicylic acid is a compound which is broken up by a large number of agents. Water is perhaps the most common. The usual method of estimating the amount of decomposition is to determine the amount of free salicylic acid. The method of testing is to dissolve a given weight of aspirin in a little alcohol and then dilute with water to a certain volume and add a solution of ammonium ferric alum.

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