FLUIDEXTRACT OF ERGOT.*

BY J. P. SNYDER.

There is probably no fluid extract at present official in the U. S. P. which is so generally used by physicians as Fluidextract of Ergot. Its preparation requires rigid control and careful standardization in order to insure therapeutic activity, and while the directions in the present U. S. P. are no doubt adequate to take care of this requirement, the finished fluid extract has been criticized from two angles. The U. S. P. VIII directed that the fluid extract be prepared with a menstruum of diluted alcohol acidulated with acetic acid which was changed in the 9th revision to diluted alcohol and hydrochloric acid. I am unfamiliar with the reasons for this change and it would be of little consequence if it were not for a decided different odor of the preparation when the hydrochloric acid is used.

Many physicians have become accustomed to the odor of the fluid extract in which the acetic acid was used and the change has led to many inquiries concerning the causes.

As far as I can personally learn the therapeutic activity of the fluid extract is not affected by the change and it is doubtful if a return in the U. S. P. X to the former menstruum would serve any useful purpose since we would simply reverse the condition and those who are now familiar with the odor of the preparation official in the U. S. P. IX would immediately notice the difference.

The only reason for mentioning it in this paper is to point out how slight changes in the long-used official preparation may excite suspicion in the minds of the physicians and lead to comments.

The second difficulty is one which everyone who has attempted to produce a fluid extract of Ergot has experienced, namely, precipitation. So pronounced has been this condition in certain lots that it was decided to investigate the situation and if possible devise some means of overcoming the difficulty.

One of the first points of interest in referring to the U. S. P. is the difference in the manufacturing process of Fluidextract of Ergot and Extract of Ergot. Under Extract of Ergot we find the direction reads, to remove the fats from the ground drug by first percolating with purified petroleum benzene, while in case of the fluid extract it states to percolate direct with the menstruum. This suggests the possibility that the fats normally found in Ergot may be the cause of the precipitation and accordingly the ether extractive of several different samples of Ergot was determined, which indicate that fats are contained in Ergot in from 18 to 28% which shows that these fats are there in no small quantities.

With this information at hand it was decided to prepare three fluid extracts from the same lot of drug as follows:

1. By the U. S. P. method.

2. By the U. S. P. method defatting after completion by agitation while warm with melted paraffin and making up to volume with diluted alcohol.

3. By defatting the drug by percolation with carbon tetrachloride or petroleum benzene dissipating the solvent from the drug by exposing it to the air and converting the resulting defatted drug into fluid extract by the U. S. P. process.

After the preparation of the fluid extracts, they were to be examined with these points in mind.

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* Scientific Section, A. Ph. A., Cleveland meeting, 1922.

1. Does the removal of the fats from the fluid extract of Ergot improve the physical appearance of the preparation?

2. What is the relative amount of precipitate found in fluid extract of Ergot from which the fats have been eliminated in comparison with that made by the U. S. P. process?

3. Which is the more advantageous method for removal of the fats, the use of an immiscible solvent such as carbon tetrachloride or petroleum benzene, or the paraffin method?

4. Do the fats normally found in Ergot possess any therapeutic activity?

5. What effect does the removal of the fats have upon the deterioration of fluid extracts of Ergot?

It was thought advisable to eliminate at once the petroleum benzene from the experiments as the fire hazard is entirely too great to permit using this liquid in large quantities, particularly as it is necessary to spread the defatted drug over a considerable area in order to volatilize the petroleum benzene.

Immediately after completion the three fluid extracts were tested by the blood pressure method with these results:

1. U. S. P. fluid extract gave a rise of 18 mm. when injected into the femoral vein of a dog in dose of 0.04 cc per Kg. weight of dog.

2. U. S. P. fluid extract of Ergot defatted with melted paraffin gave a rise of 16 mm.

3. Fluid extract of Ergot manufactured with drug defatted with carbon tetrachloride gave a rise of 19 mm.

The standard which we have adopted at our Laboratory for fluid extract of Ergot is that when injected into the femoral vein of a dog in dose of 0.04 cc per Kg. weight of dog it is required to give a rise of not less than 16 mm.; therefore, all three fluid extracts were found to meet this requirement. In fact there is very little difference between them. The one made by defatting with paraffin gave slightly lower results and as heat is very destructive to Ergot the temperature necessary to keep the paraffin melted during the defatting process may have had this slight effect.

Five hundred cc of each of the fluid extracts were transferred to cylinders of that capacity and after standing one month the fluid extract made by the U. S. P. process and that prepared by defatting with paraffin both showed a decided precipitation, while the one made by first defatting the drug with Carbon Tetrachloride is entirely free from precipitate.

After standing six months that produced by the U. S. P. process showed decided precipitate while that defatted with melted paraffin contained almost as much. Fluid extract manufactured from drug defatted with carbon tetrachloride contained only a slight film of precipitate. From the standpoint of physical examination, the latter was considered highly satisfactory, while the former two were felt to contain entirely too much precipitate.

To determine if any of the fluid extracts had deteriorated to any appreciable extent they were tested after they had stood four months again by the blood pressure method with these results:

1. The U. S. P. fluid extract gave a rise of 17 mm.

2. Defatted with paraffin gave a rise of 16 mm.

3. Prepared from drug defatted with carbon tetrachloride gave a rise of 18 mm.

CONCLUSIONS.

From the results of these experiments I find that

1. Defatting the drug with carbon tetrachloride overcomes the precipitation difficulty.

2. That defatting the drug with carbon tetrachloride is far preferable to the use of paraffin as a defatting agent.

3. That removal of the fats from the fluid extract does not affect its therapeutic activity.

4. That the removal of the fats from the fluid extract does not hasten the deterioration of the preparation.

EXPERIMENTAL LABORATORIES,
NORWICH PHARMACAL COMPANY.

STAINLESS STEELS IN THE DRUG STORE.*

BY F. J. BLUMENSCHEIN.

Stainless steel developed by Dr. C. M. Johnston, Director of Research of the Crucible Steel Co., is defined as—Rustless, Stainless, and Acid-resisting Steel.

It differs from ordinary stainless steels in a number of particulars, its special resistance qualities are contributed by using three resisting elements in addition to iron, while the stainless steels usually contain only one resisting element—chromium. The steel under consideration contains chromium, nickel and another special alloying metal along with iron, carbon, etc.

Stainless steel, to be made stainless, must be heated in an electric furnace to about 1500° C. and cooled or tempered in oil and the coating of oxides removed by polishing; it becomes very hard and takes a keen edge after the heat treatment. In the annealed condition it is not stainless but it must be annealed to be worked.

This special steel on the other hand requires no heat treatment to render it stainless and acid-resisting; however, it must first be polished to remove the oxides; thereafter, no further polishing is required, as it will not rust or tarnish.

Stainless steel is not entirely stainless; in time it becomes colored but it does not rust, as we ordinarily think of rust.

A number of different alloys are being manufactured and sold under the general titles of stainless steel or rustless steel—without regard to the nature of the alloying metal, whether it be nickel or chromium or other metal conferring similar properties to the alloy. In many cases these steels are fabricated without thought being given to some of the uses that manufactured articles of this product are employed in or used for.

This steel is made in many grades, each grade being designed for some particular class of manufacture. It can be stamped, drawn, cast or machined, etc., into almost any form possible for iron, brass, steel or Monel metal. The metal parts of soda fountains could all be made from stainless steel—drain board, sink,

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