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THE PARAMECIAL METHOD FOR THE BIOLOGIC ASSAY OF THE DIGITALIS SERIES.*

(PRELIMINARY REPORT.)

BY ALBERT SCHNEIDER.

Species of *Paramecium* have been extensively employed in a great variety of biologic experimentations. Elsewhere the writer has described the use of *Paramecium caudatum* in determining the phenol coefficient of disinfectants. The same organism has also proven valuable for the purpose of determining the comparative toxicity of chemicals and of therapeutic agents, giving results which compare well with other biologic methods, as the frog and gold fish methods. For several years the writer has made use of this protozoan in the pharmacologic laboratory to demonstrate the mode of the diuretic action of the caffeine series.

The best culture medium for *Paramecium caudatum* (commonly known as the "slipper animalcule") is a rather weak infusion of dry alfalfa to which a small amount of thyroid extract is added. Quart Mason jars about half full of the liquid and tightly sealed, kept at a temperature of 20° to 22° C., will maintain fairly pure cultures for periods of weeks and even months. Hay infusion and horse manure

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extract and mixtures of these, with or without alfalfa infusion and thyroid extract, also give good results as a culture medium.

The tentative method for assaying pharmaceutical preparations of the digitalis series by the paramecial method is as follows:

1. Place 2 cc. of the pharmaceutical preparations in clean watch glasses and evaporate to dryness at a temperature of not more than 70° C. All alcohol must be evaporated, as even very small amounts of that substance will give rise to disturbing reactions in the test organisms and which will confuse the end results.

2. Re-dissolve the nearly dry material in the evaporating dishes in about 1.5 cc. of distilled water, or normal saline. This part of the procedure has caused much trouble as it appears to be well-nigh impossible to get a complete solution or complete colloidal suspension of the inspissated extract.

3. Draw the dissolved material into a 2-cc. pipette and make up to exactly 2 cc. and mix thoroughly. This constitutes the stock solution of which suitable dilutions are to be made in order to determine the end-reaction on the paramecia.

4. Using the fluidextract of digitalis as the standard of comparison, find that percentage dilution which will kill the paramecia within 3 minutes of time, but not within one minute of time, employing essentially the technic as proposed for the determination of the phenol coefficient of disinfectants.

The preliminary tests made have demonstrated the following:

1. *Paramecium caudatum*, and also other species of paramecium, appear to be quite resistant to the action of the digitalis series, since a dilution of 1:10 of the fluidextract of digitalis does not kill within three minutes of time.

2. The results obtained by the paramecial method with preparations of digitalis, strophanthus, apocynum and of squill, do not correspond with the results obtained by the official one-hour frog method. The comparative results are lower than those given in the U. S. P.

3. The results thus far obtained are sufficiently promising, however, to make it worth while to perfect the method and to give it further trial.

ABSTRACT OF DISCUSSION.

Paul S. Pittenger inquired whether there is any variation in the reaction of the paramecium and whether Dr. Schneider had a standard for comparison, as ouabain in the frog method.

The author of the paper replied that the work was in an experimental stage and a standard will have to be provided; the work will be continued, in which several other problems also enter.

NORTH PACIFIC COLLEGE OF OREGON,
SCHOOL OF PHARMACY,
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TEMPERATURE EFFECTS ON HYPOCHLORITE SOLUTIONS OF THE CARREL-DAKIN TYPE, INCLUDING THE PROPOSED U. S. P. X FORMULA.

BY IRWIN A. BECKER.

This investigation was suggested by some unusually unstable hypochlorite solution made by diluting a concentrated proprietary preparation. It was discovered that an unknown amount of heated water was unwittingly used in making