

*Dermographia alba* indicates adrenal insufficiency, and *dermographia rubra* indicates adrenal hyperactivity, and the Goetch test reaction indicates thyroid hyperactivity. The results of the three tests made on 93 students, with age ranges from 20 to 38 years, were as follows:

Tests.	Positive.	Negative.	Per cent.
Goetch	19	74	20.40
D. alba	16	77	17.20
D. rubra	26	57	28.00

Eight students showed a positive Goetch reaction combined with *dermographia rubra*, while only four showed a positive Goetch with *dermographia alba*, which would indicate that hyperactivity of the thyroids is more frequently associated with hyperactivity of the adrenals. Only 34.40 per cent of the students tested for the three reactions showed entirely negative results, which would indicate that endocrinal imbalance is even more common than is generally supposed.

#### SOME OBSERVATIONS ON DIGITALIS ACTION.\*

BY ALBERT SCHNEIDER, M.D., PH.D.

Pulse rate reduction is utilized as a measure of Digitalis action and of dosage.

The following subjective tests on digitalis action were made by students of North Pacific College of Oregon, class in laboratory pharmacology. The purposes of the tests were as follows:

1. To determine if the pulse rate reduction in man, due to digitalis action, is uniform, and whether such reaction might serve as a measure of digitalis action and as a guide to digitalis dosage.
2. Does the simultaneous administration of digitalis and of calcium (lactate) increase and stabilize digitalis action?
3. Data regarding the rate of deterioration of digitalis leaf.

The infusion of digitalis was used in all of the tests, made from the crushed leaf of a one-pound can of "Allen's selected leaves of *Digitalis purpurea* grown in England (Stafford Allen and Sons, London, imported by Lehn and Fink, N. Y.). According to the label, this lot of leaf was assayed on July 19, 1923, with a M. L. D. of 0.0004 to 0.0005 Gm. per Gm. of body weight of frogs, and was therefore (using the average figure, 0.00045) about 25 per cent above standard strength. The leaf was again assayed (by the one-hour frog method) in the pharmacologic laboratories of North Pacific College of Oregon, on April 5, 1926, nearly three years later (2 years, 9 months, 16 days), and found to be about 8 per cent below U. S. P. standard; the leaf therefore lost about 33 per cent of its original strength within the period of time mentioned.

The infusion was made according to the U. S. P. directions, excepting that the aromatic oil was omitted. Each student received 0.1 cc. of the freshly prepared infusion per kilo of body weight, making suitable allowance for clothing (about 6 pounds). The following were exempted from the tests:

\* Scientific Section, A. Ph. A., Philadelphia meeting, 1926.

1. Bradycardia cases, or those with a pulse rate below 60 per minute.
2. Students with irregular pulse.
3. Students with variable pulse rate.

The tests were made by seventy students and two of the instructors, and repeated after an interval of two weeks. In the first test the infusion was given, *without* calcium, each student being instructed to take about 250 cc. of water with the infusion. The average normal pulse rate was ascertained just before taking the digitalis, and since these students had made pulse rate counts on previous occasions, they were unable to obtain a fairly accurate laboratory condition average, about one hour after meals. Thirty minutes after taking the digitalis they again counted the pulse rate and repeated these counts at intervals of ten to fifteen minutes, over a period of one hour and longer.

The results of the first group test (digitalis *without* lime), may be summarized as follows:

1. In about twelve per cent of the cases, the change in pulse rate was very slight and the results were rated as negative.
2. About two per cent showed an increase in pulse rate, instead of a reduction.
3. About two per cent showed results which were so variable as to be considered valueless.
4. About 84 per cent showed a decrease in pulse rate, ranging from 3 per cent to 15.6 per cent, or an average of 9 per cent reduction. In the great majority of cases, the maximum reduction in rate developed within one hour after taking the infusion, and in most cases the return to normal began from one to two hours after taking.

The results of the second tests, made by the same students several weeks after the first test (digitalis infusion *with* 3 grains of calcium lactate), may be summarized as follows:

1. In three per cent of the cases there was a rise in pulse rate.
2. About two per cent showed results which were not usable.
3. Ninety-five per cent showed a reduction in pulse rate ranging from 3.7 per cent to 30 per cent, with an average rate reduction of 10.41 per cent, the rate reduction beginning within 30 minutes after taking, and in some of the cases, the return to normal did not begin for from three to eight hours, and longer, after taking.

The following is a summarization of the digitalis action tests:

1. Calcium increases and stabilizes digitalis action. Digitalis should be combined with calcium.
2. Age modifies digitalis action. Students with age ranges from 19 to 21 years inclusive, showed an average pulse rate reduction of 11.4 per cent, whereas students with an age range from 28 to 30 years showed an average reduction of 8.94 per cent.
3. Variation in body weight apparently does not markedly modify pulse rate reduction due to digitalis action, at least not when the dosage is according to body weight. The average per cent rate reduction for weights from 160 to 190 pounds was 9.92 per cent; and for weights from 135 to 160 pounds, it was 9.30 per cent.
4. A small percentage of persons apparently show an increase in pulse rate following digitalis administration, even when combined with calcium.
5. The limited number of observations made would indicate that digitalis does not influence an irregular heart.

6. The tests indicate that the pulse rate reduction would serve as a guide to the therapeutic action of digitalis in cardiac cases, and also as a guide to dosage.

7. Well dried and well kept digitalis leaf apparently does not lose much more than eight to ten per cent of its action within one year of time. This has been varified in other samples of digitalis. However, badly cured and badly kept leaf loses its strength rapidly.

8. A full strength infusion of digitalis leaf, when given in doses of 0.1 cc. per kilo of body weight, should cause an average percentage reduction in pulse rate of 10. There is, however, considerable individual variation in the rate of reduction as was shown in the tests above outlined.

It was intended to also note the influence of digitalis action on blood pressure but press of time did not allow this. In another year the tests will be repeated, including observations on blood pressure.

---

## RESPIRATION TEST AS A POSSIBLE SUBSTITUTE FOR THE USUAL BASAL RATE DETERMINATIONS.\*

BY ALBERT SCHNEIDER, M.D., PH.D.

The author presents that the breath-holding power or capacity, in seconds with lungs deflated, under basal rate conditions, yields results which harmonize closely with the results obtained by means of the metabolors.

Within recent years physicians have given much attention to what is generally known as the basal metabolism rate determinations. In a general way the basal rate of oxygen metabolism in the living tissues is the minimal rate or that rate of oxygen consumption which will just maintain life, which will just continue the vital functions. To the physician it means the lowest rate of metabolism which is obtainable under conditions which can be met in practice. In hospital practice, the patient whose basal metabolism is to be taken, is instructed to omit the evening meal, and the conditions for a good night's sleep are provided and the basal rate determination is made in the morning before any exercise has been taken and before the morning meal. In private practice these requirements cannot always be met. The trip to the office of the physician entails a certain amount of exercise, even though the most suitable conveyance is provided, with the result that the test made in no wise indicates a basal rate or anything approximating such a rate. It would appear desirable that for office-practice conditions a different method should be agreed upon so that the results by physicians engaged in general practice might in a measure harmonize.

The value of the basal rate tests are perhaps over-estimated. That the tests have considerable diagnostic value cannot be denied, and they are also of great value in dietetics. The results of the tests are perhaps of far greater interest and value to the physiologist, the pharmacologist and the dietitian, than they are to the practicing physician. It is also true that when physicians are better informed as regards diet and dieting in disease, they will be able to make better and more extended use of the metabolors.

---

\* Scientific Section, A. PH. A., Philadelphia meeting, 1926.