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METHOD FOR TESTING FOR URIC ACID IN BLOOD

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ABSTRACT OF THE DISCLOSURE

A method for testing for uric acid in blood comprising adding a phospholithotungstic acid solution to a sample of blood serum and agitating the mixture, filtering out the resulting precipitate, adding a sodium carbonate solution to the filtrate and measuring the intensity of the color thus produced.

This application is a division of application Ser. No. 443,490, filed Mar. 29, 1965.

This invention relates to a novel method of performing blood composition tests.

Heretofore, tests involving the chemical composition of the blood, such as tests for the amount of uric acid in the blood, have usually been done by medical laboratories rather than by individual physicians. The reason has been that the tests have been complex and have required a relatively large amount of equipment. For example, a typical uric acid test was generally run as follows: First a suitable blood sample was drawn by a syringe and deposited in a tube that was put into a centrifuge to separate out the serum. Then a pipette was used to carefully measure a specified amount of the serum into a container and a protein coagulant was measured separately by another pipette and put into the same container; the two were then shaken together to coagulate the protein. Then the sample was again centrifuged or allowed to filter slowly through filter paper into a suitable container. A measured amount of the filtrate was then added to two color producing reagents that were separately measured by separate pipettes, and then the mixture was placed in a cuvette that was inserted into a colorimeter and the color determined.

The relative complexity of the test along with the amount of equipment concerned meant that the physician could rarely afford to run the test himself or even to have it run in his office by one of his assistants. That, of course, meant he had to wait for the results, sometimes a full day. One result was that in sending the serum samples out to a laboratory, he ran a risk of someone's getting the samples mixed. The procedure was usually quite uneconomical unless there were several samples from different patients, and in any event, the charge by the laboratory was relatively large in cost. Also, the fact that the test was performed by another man not under the physician's supervision meant that any indications along the way were unavailable to the physician, who could look only at the final results, usually given on a slip of paper from the laboratory.

This invention enables the physician to run the test himself or to have an assistant do it under his supervision. The tests can be run quickly, taking only a few minutes for the entire test, yet the test is done at least as well and with as sure results as he would obtain from the laboratory. In fact, because of his complete supervision of all the steps and because of the foolproof nature, the results tend to be more accurate than were obtained by well equipped laboratories. No time lag is involved instead of having to wait a day or two for the results from the laboratory, and the expense is quite small.

Other objects and advantages of the invention will appear from the following description of some preferred forms thereof.

As a specific example, consider the method used for uric acid. Small plastic squeeze bottles may each contain 6 ml. of diluted phospholithotungstic acid, all premeasured. (If desired, the test may be done in two steps by using some tungstic acid in one step for the precipitate and phosphoric acid for the next step, but this can be done in one step by the use of phospholithotungstic acid.)

Into the plastic squeeze bottle measure 0.5 ml. of blood serum. Upon shaking, this produces a precipitate, which is then filtered out while a total of 2.5 ml. of filtrate is put in a cuvette. The coloring reagent may be 10% sodium carbonate, another 2½ ml. being added, bringing the total in the cuvette to 5 ml. The sample may then be incubated at 37° C. for seven to fifteen minutes, typically ten minutes. Instead, it may be left at room temperature for fifteen to thirty minutes. Then the sample is read by reading the color by red light, since the color developed is a type of blue.

To those skilled in the art to which this invention relates, many changes in construction and widely differing embodiments and applications of the invention will suggest themselves without departing from the spirit and scope of the invention. The disclosures and the description herein are purely illustrative and are not intended to be in any sense limiting.

I claim:

1. A method for testing for uric acid in blood, comprising the steps of:
   (1) adding 1 part by volume of blood serum to 12 part equivalents of 5% phospholithotungstic acid, and mixing,
   (2) pressure-filtering the mixture to remove the precipitate and to give a clear filtrate,
   (3) adding 5 parts by volume equivalent of 10% sodium carbonate to 5 parts by volume of the filtrate and allowing color to develop, and
   (4) reading the color density thereof.

2. A method for testing for uric acid in blood, comprising the steps of:
   (1) adding 0.5 ml. of blood serum to 6.0 ml. of about 5% phospholithotungstic acid, and mixing,
   (2) pressure-filtering the mixture to remove the precipitate and to give a clear filtrate,
   (3) adding 2.5 ml. of 10% sodium carbonate to 2.5 ml. of the filtrate and allowing color to develop, and
   (4) reading the color density thereof.

3. A method for testing for uric acid in blood, comprising the steps of:
   (1) adding 1 part by volume of blood serum to 12 part equivalents of 5% phospholithotungstic acid, and mixing,

(2) removing the precipitate from the mixture to give a clear solution,

(3) adding 5 parts by volume equivalent of 10% sodium carbonate to 5 parts by volume of the clear solution and allowing color to develop, and

(4) reading the color density thereof.

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