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STANDARD SOLUTION OF GLYCEROL

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ABSTRACT OF THE DISCLOSURE

A stabilized glycerol standard solution, consisting essentially of glycerol in 0.02 to 0.2 N perchloric acid, is advantageously used to provide a reference standard in analytical methods for the determination of glycerol.

The present invention is concerned with a glycerol standard solution and a method for the monitoring and control of glycerol determinations using such a solution.

Chemical investigations in clinical laboratories are, to an ever increasing extent, carried out with the use of test combinations which contain a series of reagents, in optimum amounts, which are necessary for the biochemical determination of substances, in order to simplify, as far as possible, the carrying out of such determinations. One of the most important substances to be determined with the use of such test combinations is glycerol. In order to be able to control the correctness of such biochemical substance determinations in clinical laboratories, a continuous monitoring or control of the measured values is necessary. This monitoring is effected by use of a standard glycerol solution which contains a precise and constant amount of glycerol and permits a continuous check as to the correctness and precision of the analytical method.

It should also be added that very many methods of determination involve measurement against a comparison standard, i.e. that for each sample determination, a determination is simultaneously carried out with the use of a comparison standard.

However, in the preparation of glycerol standard solution suitable for the above purposes, considerable problems arose due to the great instability of the glycerol. The result of this instability was that, contrary to expectations, the standardized glycerol solutions showed, even after a relatively short period of time, deviations in glycerol content which could give rise to completely false glycerol determinations. Attempts to solve this problem by the addition of known stabilization agents were not satisfactory.

We have now, surprisingly, found that glycerol is stabilized to an outstanding extent by dilute perchloric acid solutions so that, even after storage for several months, no changes in the glycerol content of the standard glycerol solutons occur.

Thus, according to the present invention, there is provided a glycerol standard solution which consists of a solution of glycerol in 0.02 to 0.2 N perchloric acid, the solvent preferably consisting of approximately 0.05 N perchloric acid.

The glycerol content is itself not critical but the solution is preferably sufficiently dilute in order to insure

exact measurement thereof. From this point of view, the preferred glycerol concentration is between about 1 mg./100 ml. and 50 mg./100 ml. and is more preferably about 10 mg./100 ml.

The stabilizing action of the dilute perchloric acid ascertained according to the present invention is surprising because substances known to be outstanding stabilizing or preserving agents, such as sodium azide, have proved to be useless.

In the following table, there are given the stabilities of 5 mg. percent solutions of glycerol in water, in 0.1% aqueous sodium azide solution and also, according to the present invention, in 0.05 N perchloric acid solution. The solutions were stored at 33° C. The values given in the table refer to mg./100 ml.

TABLE

Time	With 0.05 N perchloric acid	With 0.1% sodium azide	Without stabilization agent
Initial	4.82	5.0	4.85
1 week	4.86	5.1	3.75
2 weeks	5.04	4.85	0.45
4 weeks	4.94	4.26	0.0
10 weeks	4.7	2.75	0.0
4 months	5.02	2.50	0.0

From the above table, it can clearly be seen that the glycerol standard solution according to the present invention shows, after four months storage at elevated temperature, practically no change in the glycerol content, the measured deviations lying within the limits of error. On the other hand, a normal glycerol solution contains, after two weeks, only about 10% of the original glycerol content and after four weeks glycerol is no longer detectable. When using a sodium azide solution, the glycerol content has already dropped after four weeks to such an extent that it can no longer be used as a standard solution and after ten weeks storage, the glycerol content has, under these conditions, already decreased to about one half of the initial content.

It will be understood that the foregoing specification and examples are illustrative but not limitative of the present invention inasmuch as other embodiments within the spirit and scope of the invention will suggest themselves to those skilled in the art.

What is claimed is:

1. A glycerol standard solution consisting essentially of a solution of glycerol in 0.02 to 0.2 N perchloric acid, wherein the glycerol is present in an amount of from about 1 to 50 mg./100 ml.

2. A glycerol standard solution as claimed in claim 1, wherein the content of glycerol is about 10 mg./100 ml.

3. Composition as claimed in claim 1, wherein the perchloric acid is present in a concentration of about 0.05 N.

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