This invention relates to a disposable device for housing diagnostic swabs or similar devices comprising a plastic tube containing medium in a breakable sealed section, a swab in a second section adapted so that the swab can break the seal separating it from the medium and a third seal located on the opposite side of the swab from the medium.

4 Claims, 5 Drawing Figures
DIAGNOSTIC SWAB WITH STORED CULTURE MEDIUM

BACKGROUND OF THE INVENTION

In the usual use of a swab, one is taken from a batch of sterile swabs and then applied or rubbed against the tissue concerned to secure a sample of any offending bacteria which may be present to verify a diagnosis. This being done, the swab is then placed in a sterile container which is sent to the laboratory where it is removed and then placed in another container such as a Petri dish, said container having a culture medium therein, after which the dish is then placed in an incubator to grow any colonies which may be present. The growth secured, samples of said growth are taken from the dish for examination. Once finished with, the dish must then be carefully cleaned and sterilized properly in order that it may be reused. The swab of course is discarded. Although the foregoing method is effective, it is cumbersome, time wasting and complicated to insure a definite clean sterile container for future use.

This invention presents a novel means of not only keeping the swab in an individual disposable and unbreakable container, but that container also may hold the culture medium necessary for the swab, both products being housed separately within said container until time of use of the device. At the proper time the swab is used, returned to the container, brought into contact with the culture medium and the entire unit may be placed in the incubator, and the sought for colonies grown in said culture medium right in the container. A sample is taken from that medium, and then the entire unit, the swab, the culture medium and its grown infection is immediately discarded to an incinerator for removal.

This invention then presents a device that definitely insures complete sterility for the products, ease of use, saving of labor in not having parts to clean and sterilize afterward, complete disposability, and a product which is inexpensive to produce.

The methods presently in existence all use glass tubing in which a glass ampule must be broken to release any fluid medium present. Also the swab end is broken off to fit inside of a glass tube and thus the operator must do extra work and come in contact with the swabs, itself compromising the sterility of the operation and test.

SUMMARY OF THE INVENTION

Accordingly, it is an object of the present invention to provide a novel disposable and unbreakable plastic tube device containing a medium sealed in the tube.

Another object of the present invention is to provide a disposable tube device containing both a swab and a medium in sealed portion which can be brought together when needed.

Yet another object of the present invention is to provide a disposable culture tube that insures complete sterility in that even the swab is never touched by the operator.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 illustrates the front view of the plastic tube device of the present invention.

FIG. 2 illustrates a side view of the device.

FIG. 3 illustrates the upper portion of said device.

FIG. 4 illustrates the lower portion of said device.

FIG. 5 illustrates the device after use.

As shown in the figures above-mentioned, the present invention comprises a plastic tube device with an upper or swab-holding portion 10, shown alone in FIG. 3 which is a piece of hollow plastic tubing sealed at one end 12.

The seal 12 is shaped in such a way that it frictionally holds the shaft end of a common swab 14, having a cotton pad 16. The device may also hold other elongated medical devices as well, such as a hypodermic.

The device of the present invention has a lower or medium holding portion 18, shown alone in FIG. 4 which is a piece of hollow plastic tubing sealed at the end 20 and having a breakable seal 22 located between the two ends of the lower portion 18 creating a closed sealed chamber 24 within lower portion 18.

Located adjacent medium chamber 24 is a second chamber 15 defined by the outer chamber wall 17 of lower portion 18 and a seal 19 which extends partially across the diameter of the lower tube 18 between seal 22 and the open end 26 of portion 18. This second chamber 15 with seal 19 has two important functions.

First and most importantly, when the swab 14 is forced through breakable seal 22 into the medium chamber 24 and into a liquid medium 30, seal 19 prevents the liquid 30 from shooting up the tube 18 as will happen without the presence of seal 19. This confines the liquid below seal 19.

Seal 19 extends only partially across the diameter of tube 18 sufficiently so that the combination of seal 19 and swab 14 effectively block the opening of tube 18 to confine liquid 30.

Secondly, seal 19 serves to hold swab 14 more securely in position during handling since seal 19 exerts some frictional pressure on swab 14 and in addition the greater diameter of the cotton pad 16 makes it more difficult for the swab to slip out through seal 19 and fall out of tube 18.

The hollow plastic tubing used to make the device of the present invention is well known in the art and may be manufactured by a continuous extrusion process as well known.

The sealing and cutting of the tube into the sizes and shapes necessary may be done with a machine such as that described in my U.S. Pat. No. 3,700,529 issued Oct. 24, 1972.

The upper edge 26 of lower portion 18 is open and is preferably slanted at an angle relative to the lower edge 28 of the upper portion 10 which is open and preferably horizontal so that the two portions 10 and 18 can be more easily slidingly engaged.

The upper portion 10 has a slightly larger diameter than lower portion 18 so that the upper portion 10 can easily slide over lower portion to fit snugly together. The edges 26 and 28 which must slide over each other may be both be horizontal but making one of the edges slanted makes it much easier for the operator to put the two parts together.

The closed chamber 24 is filled just prior to sealing with a liquid medium 30. This may be any medium desired depending upon the particular test or result desired.

At the time of use the operator takes the device of the present invention, which has been sterilized by any of many known methods such as heat, or radiation, and removes the upper portion 10 which holds the swab 14. The operator then takes the sample he desires by swab-
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3

bing the location to be tested with the cotton pad 16 of swab 14 and then replaces upper portion 10 by sliding it over lower portion 18. Because swab 14 is constantly covered by upper portion 10 the operator never has to directly touch swab 14.

By exerting downward pressure on the upper portion 10, swab 14 breaks through breakable seal 22, as shown in FIG. 5, and the cotton pad 16 is immersed in medium 30.

The device may be used as a transport tube where the medium 30 is used to keep the bacteria alive until the tube is taken to the laboratory and it can be transferred to a Petri dish, or as stated the tube itself may be placed in the incubator to grow the culture. Other uses can be made of the present device such as conducting a test in the tube itself where the medium 30 is one that changes color upon introduction of a certain substance.

It will be obvious to those skilled in the art that various modifications of the present invention may be resorted to in a manner limited only by a just interpretation of the following claims.

I claim:

1. A disposable culture tube device comprising:

2. The device of claim 1 wherein the elongated medical device is a sterile swab.

3. The device of claim 1 wherein the open end of the lower tube is cut at an angle relative to the open end of the upper tube.

4. The device of claim 1 wherein the upper tube has a diameter larger than the lower tube so that the upper tube slides frictionally over the lower tube.

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