Fungi growth: Growth may be defined as an irreversible increase in the volume of an organism, usually accompanied by an increase in biomass.

Laboratory methods for measuring the growth rate of fungi:

Measure the rate of fungal growth on solid media by measuring the diameter of the colony while on liquid media we use the method of dry weight.

1- Measure the diameter of the colony:

It is the most common way is made through pollination mid dishes containing Media PDA by regular discs from fungal culture age between the (7-14 days) and then incubated at a temperature of 25 ° C or in room temperature for a week, and measure the diameter of colony at regular intervals and make two lines perpendicular to the base plate and measure both of them and take the average.

The downside of this method is that it ignores the thickness of the developing mycelium in the dish. Some fungi may not expand in growth horizontally as much as it expands vertically.

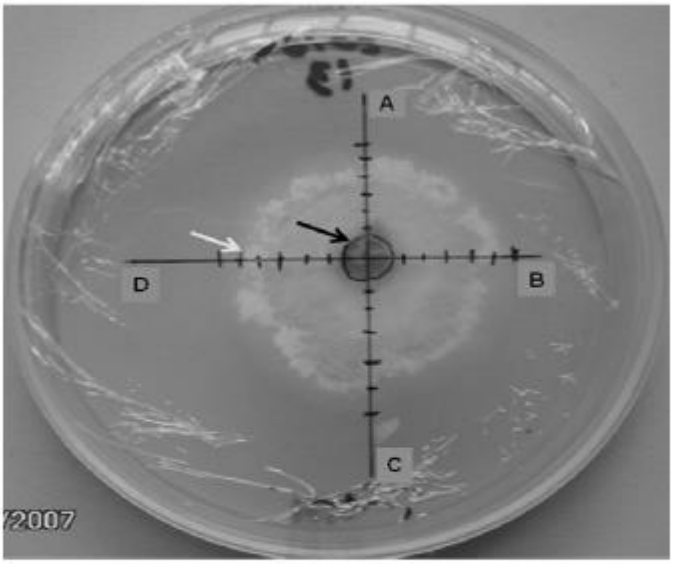

Figure 1. Petri dish used for fungus growth bioassay. Black arrow indicates the edge of initial inoculum. White arrow indicates the edge of fungi radial growth six weeks after bioassay start. Letters A, B, C, D correspond to the four segments used for growth measurements.

2- The method of measuring dry weight and wet weight:

This method is considered one of the best ways and the most accurate and which weighed mycelium by filtration of media components with the fungal growth and washing the mycelium and to get rid of the remnants sticking with the media, weighed mat fungal wet and then dried mycelium in special oven at a temperature of 80 ° C until constancy weight and weighed mycelium after drying on a sensitive balance and sufficient weight to approximate the nearest mg. This method is used with the liquid media.

The problem of this method is that the weight may reflect the accumulation of multiple sugars or other materials.

3- Turbidity method

This method for estimating private growth unicellular fungi, such as yeast, can be made a count by using a hemacytometer slide, also spectrophotometer device used to estimate the number of cells through the turbid measure where the turbid turn into a number of cells through use of standard curve. The problem with this method is that it is estimated the living and the dead cells together.

4- Measure the concentration of the cell components

Some of the cell components such as chitin, glucosamine, is considered as a standard for growth.

It is a useful way to measure the growth of pathogenic fungi for the plant, after the hydrolysis of the infected tissue is released glucose-amin, which is separated chromatography, separated quantity commensurate with the dry weight, which can determine the severity of the infection in the plant tissue. The membrane lipid ergosterol is found almost exclusively in fungi, and is frequently used by environmental microbiologists as an indicator of living fungal biomass.

5- Metabolism measurement

Metabolic activities are used as a measure of growth, such as the production of co2, to estimate the growth of some fungi in the fermentation .

Experiment :

Dry weight of fungal growth

materials and tools:

-prepare six flasks contain liquid media

-filter paper

-sensitive balance

-oven

-pure fungal culture

method:

-under sterilization condition inoculate the flasks with 2 discs of young and pure fungal culture.

-incubate the flasks in 25 C for 5 -7 days

-filtrate the fungal growth with filter paper.

-Fungal growth is washed with distilled water and dried by pressing it - with a filter paper

- The fungal growth is placed in an oven with a temperature of 80 ° C. for 48 hours. We measure the weight every day until we reach a constant weight. This is estimated by dry weight.

:-The dry weight is calculated as follows

Dry weight of fungus = (weight of filter paper + fungus weight) - weight of filter paper