Comparison of Petri Dishes

Sizes: Small (54 mm), Medium (83 mm) Large (136 mm)

COST OF THE PLATE - The smallest size is not the cheapest but the medium size is cheaper than the large. Most labs use either the medium or the large.

COST OF THE GROWTH MEDIA - Bigger plates use more media than smaller plates.

INCUBATOR SPACE - The smaller the plate, the more you can fit into an incubator.

PRACTICAL CONSIDERATIONS:

A. Smaller plates might dry out faster than larger plates.

B. It is easier to isolate individual colonies on the large plate using the "quadrant streak method". The large plate is most convenient when you are trying to obtain isolated colonies of bacteria and/or want to study colony morphology as a means of identification (see below).

C. Any size plate may be used when doing "pour plate" or "spread plate" enumerations. When you are doing water sampling, you generally expect to have low bacterial counts and using the smaller plate is most economical.

POUR PLATE - The bacteria dilution is added to a small volume of molten agar in a test tube that is held at a temperature just above the point where the agar will solidify. This tube is then poured onto an agar plate containing a base layer of the agar media. You swirl the molten agar around for an even layer. When solidified, you invert the plate and place in the incubator. The majority of colonies you see will be imbedded in the agar and a few will be on the surface. You can normally see 100-200 colonies per plate although 200 is really pushing it. For accuracy, you may want a maximum of 30-50 colonies per plate. These numbers differ from lab to lab and microbiologist to microbiologist.

SPREAD PLATE - You can either pipet on a small volume of the bacterial dilution or you can use a volumetric loop to inoculate the plate. You then spread this all over the agar surface. You can usually invert the plate immediately for incubation.

ISOLATING A SINGLE CELL - Make serial dilutions of broth culture or sample material using a dilution buffer or saline blank: add 1 ml to 9 ml, mix and then transfer 1 ml to 9 ml, mix and repeat a number of times so that you "bracket" the bacterial concentration. You can use these dilutions to inoculate the agar plate and then use the "quadrant streak method" to isolate a single colony.

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