

Viability Assay

adapted from Freshney, R.L., 1994. Culture of Animal Cells: A Manual of Basic Technique. 3rd Ed. Wiley-Liss. New York. USA

Viability assays measure the percentage of a cell suspension that is viable. This is generally accomplished by a dye exclusion stain, where cells with an intact membrane are able to exclude the dye while cells without an intact membrane take up the coloring agent. The dye used for exclusion stain is usually trypan blue but erythrosin and naphthalene black have also been used. A dye uptake stain can be used to measure viability as well. In this case, the dye is normally taken up by viable cells but not by the non-viable cells. Diacetyl fluorescein is an example of a dye used for dye uptake assays. The trypan blue dye exclusion is commonly used and a protocol for this procedure is included here:

1. Prepare a cell suspension of the cells to be assayed (about 10^6 cells/ml).
2. Prepare a 1:1 dilution of the suspension using a 0.4% trypan blue solution.
3. Load the counting chambers of a hemocytometer with the dilution (see Hemocytometer Counting).
4. Let sit for 1-2 minutes (do not leave longer as viable cells may die and begin to take up the dye).
5. Count the number of stained cells and total number of cells following the above procedure for Hemocytometer Counting.
6. The calculated percentage of unstained cells will represent the percentage of viable cells.