Indian Institute of Technology Delhi
Department of Biochemical Engineering and Biotechnology

I SEMESTER
BBL132 – GENERAL MICROBIOLOGY LABORATORY

EXPERIMENT # 10

AIM

To study the effect of ultraviolet radiation on bacterial growth.

BACKGROUND

In nature, the growth and survival of microbes are profoundly influenced by the physical factors in their environment. Ultraviolet radiation (100-400 nm) is of interest here because it is used in certain environments to kill microbes. However, very small dosage of UV light can make inheritable changes in the hereditary molecule, DNA. These slight changes in inheritable characteristics are often irreversible, but not lethal, to the cell. In this way, mutant off springs are produced. A mutant is a organism that has different genetic characteristics from its parent.

MATERIALS

(1) Broth culture of *Escherichia coli* (2) Nutrient agar plates (3) Ultraviolet lamp (4) Timer (5) Glass spreader (6) Sterile tubes.

PROCEDURE

1. Properly label the agar plates.
2. Inoculate each of the plate with 0.1 ml of the broth cultures; then spread the inoculum over the entire surface with a glass-spreading rod.
3. Place the plates under the UV lamp with lids removed and expose for different lengths of time (10-60 sec) at a distance of 2.4 inches above the plates.
4. Recover the plates with their lids and incubate inverted at 30°C for 24 hours.
5. Record the number of mutants survived at each exposure time.
6. Plot log CFU/ml v/s time of exposure to UV to get the kill curve.

PRECAUTION

Be careful not to look at the rays coming from the ultraviolet lamp.