AIM OF THE PRESENT STUDY
Blue-green algae are the only other oxygen evolving photoautotrophs besides higher plants. Their prokaryotic cell encloses a photosynthetic apparatus remarkably similar in functional, structural and molecular respects to that contained in the eukaryotic chloroplast. However, they differ from higher plants in having a characteristic light-harvesting pigment complex — the phycobilisomes, homologous with that of the rhodophyta chloroplast. Thus, their resemblance with higher plants and red algae makes them a unique system to study the various events involved in photosynthesis. Due to their fast growth, easy handling, simple genome organization and the ability to get transformed with DNA cyanobacteria offers a simple model system for the study of various fundamental cellular processes.

The cyanobacteria are important components of the microscopic community of fresh water and marine phytoplanktons and contribute significantly to the sea productivity. The persistence of the heavy metals in the water renders them amenable to uptake by the phytoplanktons thereby, affecting the total biomass production. Thus, in the present investigation an effort has been made to study the effects of four heavy metals viz., copper, cadmium, lead and thallium on the photosynthetic processes of Anacystis and Nostoc.

Anacystis being unicellular and non-filamentous can be easily manipulated under laboratory conditions. It is being used for studying various photochemical and photobiological processes.

Nostoc muscorum being filamentous and heterocystous is of great importance due to its ability to fix nitrogen. They are promising agents for the development of a biological solar energy conversion system, based on the light driven generation of oxygen and hydrogen.
The main objectives of the present study are

1. to study the morphological changes occurring in the cells due to heavy metal toxicity.

2. to characterize the sites of action of metals on electron transport activity.

3. to study the alterations in the spectral properties of cells.

4. to study the effect of metals on total protein.

5. to pinpoint the heavy metal induced toxicity in the pigment-proteins involved in energy transfer.