Aims and Objectives
AIM AND OBJECTIVES

Biofilm, "the city of microbes" comprises population or communities of microorganisms that have attached themselves to a surface and occurring in nearly every moisture environment where sufficient nutrient flow is available. It is the inherent ability of bacteria to show attached mode of life. These microorganisms behave differently and exhibit new phenotypic characters including intrinsic resistance to antimicrobial agents, therefore pose a public health problem. A significant number of people are found to be affected by biofilm infections. They may also develop on medical devices implanted in the body such as catheters artificial joints, and mechanical heart valves and become a source of persistent infection. Recently clinical microbiologists have recognized the role of these resistant biofilms in many infectious diseases and devices related to nosocomial infections. It is very difficult or impossible to treat or remove them with currently available antimicrobial agents. Although a number of therapies have been developed to compensate for the shortcomings of chemotherapy, they are all validated mostly against planktonic forms.

Development of effective diagnostics and novel control strategies for these clinically most sought biofilm forming organisms largely depend on better understanding of their surface selection, mode of attachment, and their resistance to antimicrobials and genetic makeup. Consequently any knowledge generated through systematic investigation on biofilm forming microorganisms would ultimately lead to the development of suitable drugs to contain the pathogens besides the evolution of therapeutics and efficient management of diseases. Hence it is desired to investigate the course of events that unfolds many secrets during the process of biofilm formation by clinical isolates, and develop possible innovative control strategies. This will pave way for the appropriate management of biofilms.
In lieu of the above, the following specific objectives are designed to achieve the main aim of the study.

- To isolate, identify and determine the susceptibility pattern of biofilm forming bacteria from clinical specimens obtained from diseased patients and contaminated medical devices.

- To assess the adherence, biofilm forming ability of the isolates employing conventional and molecular methods.

- To characterize the produced exopolysaccharides and determine the factors influencing biofilm formation.

- To screen and characterize the antimicrobial and antibiofilm activity of isolated lytic phages, traditional medicinal plant bioactive compound as well as synthesized nanoparticles.

- To develop and formulate an effective biofilm inhibiting agent by applying the above agents.