**ABSTRACT**

Human immunodeficiency virus (HIV) infection and acquired immune deficiency syndrome (AIDS), commonly referred to as HIV/AIDS, constitute one of the most serious infectious disease challenges to public health globally, and has had a crippling effect in certain parts of the world. There are currently 33.2 million people living with HIV/AIDS globally.

The people suffering with HIV infection need to take more number of drugs with repeated administration. This is because of the structural changes of the viral gene in side the cell and less biological half lives of these drugs. This causes the patient non compliance and some time may lead to the severe adverse affects. Sustaining the drug release of these drugs may improve the patient compliance, reduce the plasma drug fluctuations and limit the adverse reactions.

In the present study three anti retroviral drugs such as lamivudine, zidovudine and stavudine were selected to develop the extended release formulations using various rate controlled polymers such as cellulose derivatives, methylacrylates, carbopols and polyethylene oxides. Formulations and processing parameters were developed and optimized in order to achieve the desirable rate of drug release from each drug delivery system. Various physico-chemical properties for the matrix tablets, granules and microcapsules were studied with an aim to commercialize final product. In vitro dissolution and in vivo bioavailability studies were conducted on selected formulations. Accelerated stability studies on some selected formulations were conducted as per ICH guidelines.

This research study provided useful information on preformulation and formulation optimization of three anti retroviral drugs during development of controlled drug delivery systems containing various rate controlling polymers.