PREFACE

Inflammation is the manifestation of cellular and vascular response of the host tissue to injury, which may be inflicted by physical or chemical agents, ischemia, etc. The pharmacological approach for the management of inflammation involves administration of anti-inflammatory agents. Topical route of administration is the preferred route for management of ocular inflammation. Only few anti inflammatory agents which possesses certain physicochemical properties can be formulated in to ocular region, which is because physiologic constraints of the eye.

NSAID’s comprise of different chemically heterogeneous class of agents which possess potent cyclooxygenase (COX) inhibitory activity. However, the topical use of NSAID’s in ophthalmology is limited to relatively water soluble phenyl acetic acid, phenyl alkanoic acid and indole derivatives.

Ketorolac is applied topically in the management of seasonal allergic conjunctivitis, postoperative ocular pain and inflammation. Instillation of ketorolac tromethamine (0.5% w/v) aqueous solution was associated with ocular irritation, mainly burning and stinging. To reduce the incidence of this adverse affect, use of lower concentration of ketorolac tromethamine (0.4% w/v) has been advocated. The anti-inflammatory activity of the levorotatory (l) isomer of the drug is twice that of dextrorotatory isomer (d).

Diclofenac is chemically 2(2, 6-dichloroanilino) phenyl acetic acid. It has a poor aqueous solubility. It is usually used as sodium, potassium and diethyl amine salts. For ophthalmic use diclofenac is commercially available as 0.1% w/v aqueous solution of its sodium salt. Diclofenac is applied topically in the eye for the management of pain in corneal epithelial defects following surgery or accidental trauma treatment of post operative ocular inflammations, chronic non-infectious inflammations and prevention of intra-operative miosis during cataract surgery and for symptomatic relief of seasonal allergic conjunctivitis.

Due to pre-corneal constrains ocular availability of drugs is less when they are administered in conventional dosage form. Nano-sized drug delivery systems is an emerging concept with promising potential to allow ophthalmic drugs to overcome
the ocular physiological barriers by enhancing penetration, prolonging ocular drug residence time and allowing the delivery of high drug concentrations to ocular tissues, with relatively fewer side effects such as toxicity in comparison to drug suspension and conventional formulations.

The present research in this thesis is planned to develop and evaluate ketorolac tromethamine/diclofenac sodium loaded nanosized particles using double emulsion technique with possible high loading efficiency, small size and mono disperse system.