Abstract

Allergic conjunctivitis (AC) is one of the most eye sight-threatening infections. Ebastine is available as an oral antihistamine formula for allergic disorders such as tablets and syrup. Topical antihistamines are preferred for treating ocular allergies over oral agents since their direct application at the site of action results in rapid onset and superior efficacy with less systemic side effects. Hence, topical formulation of ebastine was developed to achieve its onsite exposure for ocular allergies. Successful dissolution of ebastine in microemulsion allows its use in more convenient soluble form. Initially, solubility of drug in various oils, surfactant and cosurfactant was determined, followed by pseudo-ternary phase diagram to find microemulsion area. The D-optimal mixture design was employed for optimization of microemulsion formulation and converted into microemulsion based gel for increasing residential time at the site of action. The optimized microemulsion formulation and microemulsion based gel was characterized for various parameters like transparency, pH, drug content, droplet size, zeta potential, viscosity, osmolarity, refractive index, surface tension, rheological assessment, mucoadhesive strength and spreadability. The optimum physicochemical properties of developed formulations were observed to be eye-fitting. The in vivo efficacy study and ocular tolerability study was accessed using animal model. The bioanalytical method was developed and validated for ebastine for assessing pharmacokinetic parameters. The microemulsion based gel of ebastine had great potential for treating ocular allergy symptoms and can be considered as a great alternative to customary oral formulations of poorly soluble antiallergic drug, exhibiting site specific delivery, resulting in reduction of dose as well as obviating systemic side effects.

This PhD Thesis would be useful to improve ocular health of individuals of the society by the way of providing a novel, safe and patient compliant formulation for ophthalmic use.

List of Publication(s):