

Chloramphenicol Loaded Microemulsions: Development, Characterization and Stability

Muhammad Abid Rashid^a, Tehreem Naz^a, Madeeha Abbas^a, Sadia Nazir^b, Nafisa Younas^a, Sana Majeed^a, Naseem Qureshi^c, Muhammad Nadeem Akhtar^d

^aDepartment of Chemistry, University of Agriculture, Faisalabad 38040, Pakistan

^bDepartment of Chemistry, Govt. College Women University, Faisalabad, Pakistan

^cDepartment of Chemistry, Karakoram International University, Gilgit 15100, Pakistan

^dFaculty of Industrial Sciences & Technology, University Malaysia Pahang, Pahang 26300, Gambang, Malaysia

ABSTRACT

This study aimed to formulate and characterize microemulsions containing chloramphenicol. Microemulsions represent highly biocompatible drug delivery systems due to their potential for increased absorption as well as high solubilization capacity. MEs were composed of Oleic acid, non-ionic surfactants tween 20/60, 1-propanol and phosphate buffer. The optimum weight ratios of components and MEs areas were determined by pseudo-ternary phase diagram. All formulations were physically characterized by centrifugation, pH, refractive index, conductivity, viscosity, surface tension and partition coefficient. The specific residence site of chloramphenicol was detected by ¹H NMR study. It was uncovered that drug is entrapped between the oxyethylene groups of hydrophilic shell of MEs. So, the drug was screened from bulk water and its stability was enhanced. Thus, all characterizations have suggested that formulated MEs have potential for ocular application, being able to use as efficient drug carrier for ocular drug delivery.

Keywords: Microemulsions; Novel carrier; Chloramphenicol; Drug location; Stability