# DEVELOPMENT OF ERLOTINIB ENCAPSULATED SELF-ASSEMBLED MIXED MICELLES: OPTIMIZATION AND *IN VITRO* EVALUATION

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**ABSTRACT**

For the treatment of lung cancer, erlotinib is used as primary treatment. Erlotinib is an epidermal growth factor receptor inhibitor, however it is deposited in normal cells also and clinicians do not prefer it. This constraint opens the way for development of targeted therapy. Mixed micelles via self-assembly have the functionality to improve the delivery of hydrophobic drugs, and improve the pharmacokinetics of the loaded drug. Pluronic® F127 and tocopheryl polyethylene glycol succinate were used to prepare micelles. Box-Behnken design was applied to optimize formulation. With optimum ratio, micelles were characterized, and pharmacokinetic parameters were predicted. Design batches $F_1$ to $F_{15}$, showed the range of 42-133 nm size and 55-82 % of entrapment. Critical micelles concentration was found to be $3 \times 10^{-5}$ M. Drug release of optimized mixed micelles was found 84.91± 1.58 % in 72 h. In a nutshell, self-assembled mixed micelles would be a suitable delivery platform for targeting anticancer agents.